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## THE EFFECT OF SMOKING CIGARETS

### AND OF INTRAVENOUS ADMINISTRATION OF NICOTINE ON THE ELECTROCARDIOGRAM, BASAL METABOLIC RATE, CUTANEOUS TEMPERATURE, BLOOD PRESSURE AND PULSE RATE OF NORMAL PERSONS


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The effect of the smoking of tobacco on the circulation of man has been the subject of many excellent papers. Comprehensive investigations of the pharmacologic and physiologic action of tobacco smoke and nicotine have been reported elsewhere and are not within the scope of this paper.

The vasoconstrictor action of smoking tobacco was first demonstrated by Bruce and his associates [1] in 1909 by means of the plethysmograph. Hesse [2] in 1907 and Lee [3] in 1908 had observed that smoking produced an elevation of the blood pressure and an increase of the pulse rate. Since that time it has been further recognized that the smoking of cigarets produces vasoconstriction characterized by a decrease of cutaneous temperatures of the extremities or plethysmographically by a decrease of the velocity of blood flow together with an elevation of blood pressure and pulse rate. Renewed interest in the effects of the smoking of cigarets arose as a result of its alleged etiologic relation to peripheral vascular disease.

Maddock and Coller [4] and Maddock, Malcolm and Coller [5] in a series of papers demonstrated that smoking produced vasoconstriction of the peripheral blood vessels of the extremities and elevation of the blood pressure and pulse rate not only of patients suffering from peripheral vascular disease but also of normal subjects. Further, they demonstrated that intravenous injections of nicotine produced similar changes in normal persons. Barker [6] in 1933 observed a significant vasoconstriction in the digits of normal subjects after they had smoked cigarets. He reported that the effect was apparently due to the absorbed portion of the tobacco smoke and not to the smoke from the cigaret paper. In the same year Wright [7] and in 1934 Wright and Moffat [8] noted similar changes in cutaneous temperatures of the extremities and vasoconstriction of the capillaries of the nailfolds with smoking of both standard and denicotinized cigarets. "An ashless filter paper cigaret produced no appreciable effects on the surface temperature." In contrast Mulinos and Shulman,[9] who used the capillary microscope, the plethysmograph and the cutaneous temperature of fingers to determine the effect of smoking on the peripheral circulation, concluded that the greater part of the observed decrease of peripheral blood flow could be accounted for by deep breathing. Smithwick [10] likewise reported a decrease of blood flow through a finger after a deep breath, immersion of the contralateral hand in cold water, a loud noise or even an unpleasant thought.

Weatherby [11] also found that such stimuli may cause changes of cutaneous temperature comparable to those produced by smoking. However, he found that vasoconstriction took place after the smoking of standard cigarets but that when nicotine was removed from standard cigarets and the denicotinized cigarets were smoked the vasoconstriction was abolished almost completely. Restoration of the original nicotine content to such cigarets restored the original effects, indicating that nicotine is the most important agent which contributes to the circulatory and cutaneous changes. Weatherby also noted that when his subjects were ambulatory vasoconstriction of the peripheral blood vessels did not occur during the smoking of standard cigarets.

In contrast Evans and Stewart [12] found a similar decrease of peripheral blood flow with reduction of cutaneous temperatures of the extremities as a result of the smoking of standard cigarets, denicotinized cigarets or cigarets not containing any nicotine (corn silk). They attributed these changes to sympathetic stimulation brought about by the irritating effect of smoke on the respiratory tract and not due to the nicotine content of the cigaret.

From the Section on Clinical Physiology, Mayo Clinic (Dr. Roth) and the Division of Physics and Biophysical Research, Mayo Clinic and Mayo Foundation (Dr. Sheard).

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4. Maddock, W. G., and Coller, F. A.: Peripheral Vasoconstriction by Tobacco Demonstrated by Skin Temperature Changes, Proc. Soc. Exper. Biol. & Med. **29:** 487-488 (Jan.) 1932; Peripheral Vasoconstriction by Tobacco and Its Relation to Thromboangiitis Obliterans.[3a]
5. Maddock, W. G.; Malcolm R. L., and Coller, F. A.: Thromboangiitis Obliterans and Tobacco: The Influence of Sex, Race and Skin Sensitivity to Tobacco on Cardiovascular Responses to Smoking, Am. Heart J. **12:** 46-52 (July) 1936.
6. Barker, N. W.: Vasoconstrictor Effects of Tobacco Smoking, Proc. Staff Meet., Mayo Clin. **8:** 284-287 (May 10) 1933.
7. Wright, I. S.: Clinical Value of Human Capillary Studies in Fever, Mental Deficiency, Nephritis, Vascular Diseases, Clubbed Fingers, Arthritis, Tobacco Smoking and Argyria, J. A. M. A. **101:** 439-442 (Aug. 5) 1933.
8. Wright, I. S., and Moffat, D.: The Effects of Tobacco on the Peripheral Vascular System, J. A. M. A. **103:** 318-323 (Aug. 4) 1934.
9. Shulman, I., and Mulinos, M. G.: The Factors Concerned in the Vasoconstriction from Tobacco Smoking, Am. J. Physiol. **126:** 629-630 (July) 1939. Mulinos and Shulman.[3a]
10. Smithwick, R. H.: Surgical Intervention on the Sympathetic Nervous System for Peripheral Vascular Disease, Arch. Surg. **40:** 286-306 (Feb.) 1940.
11. Weatherby, J. H.: Skin Temperature Changes Caused by Smoking and Other Sympathomimetic Stimuli, Am. Heart J. **24:** 17-30 (July) 1942.
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Simultaneously, Johnston [13] in England added to the nicotine hypothesis by assuming that the smoking of tobacco is essentially a means of administering nicotine. He gave nicotine both hypodermically and intravenously and obtained a vasoconstrictor effect similar to that of smoking tobacco.

Because of the apparent lack of agreement among the various investigators and the importance of this subject to the clinician, further study of the subject seemed desirable.

## PROCEDURE

Sixty-six observations were made on 4 male physicians and 2 female technicians whose ages ranged from 22 to 41 years. All were habitual smokers and inhaled during smoking. As they were accustomed to the procedures in the psychrometric room, psychic stimulation was at a minimum.

Standard cigarets of different brands bought on the open market were used. As a control, cigarets made of corn silk were smoked. Also comparative studies with standard cigaret paper and French ashless cigaret paper were made with equal weights of standard cigaret tobacco and corn silk to investigate the possibility of an irritating factor in the preparation or bleaching process of the paper. Also a popular British cigaret filter holder was used with standard cigarets.

Data were obtained in a constant temperature room with an environmental temperature of 78 F. and a relative humidity of 40 per cent. The subjects were fasted for fifteen hours previous to the tests, and during the test they wore lightweight short pajamas and except when otherwise noted were in the supine position on comfortable beds.

The temperatures [14] of the plantar surface of the first and third toes of both feet and the volar side of the distal phalanges of the first and third fingers of both hands were measured by means of thermocouples [15] of copper and constantan. When fairly constant readings of the cutaneous temperatures had been obtained and determinations of basal blood pressure and pulse rate had been made, smoking was begun. Two cigarets were smoked in succession until two thirds of each had been smoked. Simultaneous determinations of blood pressure, pulse rate and cutaneous temperature were obtained at one minute intervals during the smoking period, which generally lasted about twelve to sixteen minutes. The subjects inhaled the tobacco smoke with their accustomed depth and frequency. Further, the observations were continued for thirty minutes to one hour after smoking. An attempt was made to avoid all unnecessary noise and other stimuli which might produce vasoconstriction during this period.

Observations were divided into six groups:

GROUP I. *Cutaneous temperatures while the subjects were resting in the supine position wearing lightweight short pajamas.* The cutaneous temperatures of the extremities were observed before and after the smoking of two cigarets of the four types of cigaret previously mentioned. The British filter holder also was used. As a further control, puffing an unlighted cigaret was tried on several occasions to determine the effect on the cutaneous temperatures of the extremities. In many instances the oral temperature was noted before and after smoking, and in several instances rectal temperatures were recorded simultaneously with those of the fingers and toes. On one occasion twenty thermocouples were used and peripheral blood flow was calculated according to the method of Hardy and Soderstrom.[16]

GROUP II. *Cutaneous temperatures of the extremities of fully clothed subjects while sitting or during slow walking.* Determinations of the cutaneous temperatures were made by placing thermocouples inside the socks and shoes. The subjects sat in a comfortable chair with a back rest for a thirty minute control period. Two standard cigarets were then smoked. For slow walking a similar control period was employed while the subject averaged four short steps backward and forward for each three seconds. Again two standard cigarets were smoked and the usual observations made.

GROUP III. *Basal metabolism.* The basal metabolic rate was first determined, then two standard cigarets were smoked and the determination of the basal metabolic rate was repeated immediately after the smoking had been finished. Similar observations with corn silk were made for comparison. Studies of the cutaneous temperatures of the extremities were carried out in most instances.

GROUP IV. *Electrocardiography.* Electrocardiographic tracings were made before and after the smoking of two standard cigarets and at another time after the smoking of two corn silk cigarets for control.

GROUP V. *Intravenous administration of nicotine.* After basal determinations of the cutaneous temperatures of the extremities had been noted, an infusion of isotonic solution of sodium chloride was started. When basal readings had been observed under these circumstances, without the subject being aware of the change, 2 mg. of nicotine was given through the same apparatus. Electrocardiographic tracings were obtained at several intervals before, during and after the infusion of isotonic solution of sodium chloride and nicotine. The determinations of cutaneous temperature were discontinued during the taking of the electrocardiograms except in 1 instance but were resumed after the tracings had been made.

GROUP VI. *Blood pressure including the cold pressor test and pulse rates.* Determinations of blood pressure and pulse rates were made simultaneously with the observations of cutaneous temperature in all the foregoing groups. In addition a cold pressor test was done on each subject. The method of Hines and Brown [17] was employed. After basal blood pressures had been obtained one hand was immersed well above the wrist in water at 4 C. for one minute and the response of the blood pressure was noted during this period. This was done to determine whether any parallelism existed between the reactivity of the blood pressure to the cold pressor test and hypersensitiveness to tobacco.

13. Johnston, L. M.: Tobacco Smoking and Nicotine, Lancet **2**: 742 (Dec. 19) 1942.
14. Sheard, C.: The Electromotive Thermometer: An Instrument and a Method for Measuring Intramural, Intravenous, Superficial and Cavity Temperatures, Am. J. Clin. Path. **1**: 209-226 (May) 1931.
15. Sheard, C.; Williams, M. M. D.; Roth, G. M., and Horton, B. T.: The Role of the Extremities in the Dissipation of Heat from the Body in Various Atmospheric and Physiological Conditions, J. Am. Soc. Heat. & Vent. Engin. **45**: 135-152 (Jan.) 1939.
16. Hardy, J. D., and Soderstrom, G. F.: Heat Lost from the Nude Body and Peripheral Blood Flow at Temperatures at 22 C. to 35 C., J. Nutrition **16**: 493-510 (Nov.) 1938.
17. Hines, E. A., Jr., and Brown, G. E.: The Cold Pressor Test for Measuring the Reactibility of the Blood Pressure: Data Concerning 571 Normal and Hypertensive Subjects, Am. Heart J. **11**: 1-9 (Jan.) 1936.

## RESULTS

GROUP I. *Cutaneous temperatures while the subjects were resting in the supine position wearing lightweight short pajamas.* When an unlighted cigaret was puffed for the period it usually took to smoke two standard cigarets there was little or no change of the cutaneous temperature of the extremities. The average decrease of cutaneous temperature after the smoking of two standard cigarets was 1.8 degrees C. for the toes, with a range from 0.7 to 4.0 degrees C., while for the fingers it was 3.2 degrees C. with a range from 1.2 to 6.5 degrees C. The maximal decrease for any one toe was 4.3 degrees C. and 7.7 degrees C. for a finger (table 1).

After the smoking of two standard cigarets the maximal rise of oral temperature was 0.6 degree C. Also the rectal temperatures were little changed in two observations on 1 subject. The actual rectal temperature ranged from 37.2 C. (98.9 F.) to 37.4 C. (99.3 F.) in 1 instance and changed from 37.4 C. (99.3 F.) to 37.8 C. (100 F.) at another observation. These changes could not be considered significant in the procedure and type of investigation with which we are concerned.

When two corn silk cigarets were smoked by each of 4 of the subjects on five occasions there was an increase of 0.1 to 0.7 degree C. in the toes in three observations and a decrease of 0.7 to 1.4 degrees C. in two observations. In the fingers there was a decrease of 0.4 to 1.1 degrees C. except in 1 instance, in which there was an increase of 0.3 degree C. The greatest decrease which took place in any digit was 2 degrees C. (table 2). Figure 1 demonstrates graphically the comparison of puffing on an unlighted cigaret, smoking two corn silk cigarets and smoking two standard cigarets.

The effect of smoking two corn silk cigarets and two standard cigarets on the peripheral blood as determined by the method of Hardy and Soderstrom [16] showed little change with the corn silk cigarets and the usual change with two standard cigarets. When French ashless cigaret papers were used with the amount of tobacco in a standard cigaret or with corn silk, the effect on the cutaneous temperatures corresponded to the effect produced by the respective cigarets alone. The British filter holder together with standard cigarets produced the same decrease of cutaneous temperature of the extremities as the standard cigarets did alone.

GROUP II. *Cutaneous temperatures of the extremities of fully clothed subjects while sitting or during slow walking.* Figure 2 demonstrates the effect of the smoking of two standard cigarets on the cutaneous temperatures of the extremities while sitting and during slow walking. In each instance there was a decrease of the cutaneous temperatures of the fingers and toes. Similar results were obtained for 2 other subjects.

GROUP III. *Basal metabolism.* As has been shown previously, there is a more or less linear [18] relation

TABLE 1.—*Effect of Smoking Two Standard Cigarets on the Cutaneous Temperatures of the Extremities, Blood Pressure and Pulse Rate*

| | Average Cutaneous Temperatures, Degrees C. | | | | | | | | Blood Pressure, Mm. of Mercury | | | | | | Pulse Rate, Beats per Minute | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Toes | | | Fingers | | | Maximal Decrease in a Single Digit | | Basal | | During Smoking | | Increase | | | | | |
| Subject | Before | During Smoking | Average Decrease | Before | During Smoking | Average Decrease | Toes | Fingers | Systolic | Diastolic | Systolic | Diastolic | Systolic | Diastolic | Before | During Smoking | Increase | Cold Pressor, Mm. of Mercury |
| 1 | 26.0 | 24.9 | 1.1 | 34.8 | 28.3 | 6.5 | 1.7 | 7.7 | 98 | 60 | 108 | 75 | 10 | 15 | 48 | 84 | 36 | 95/70-110/80 |
| 2 | 27.1 | 25.0 | 2.1 | 29.6 | 27.1 | 2.5 | 2.2 | 2.8 | 102 | 70 | 125 | 84 | 23 | 14 | 76 | 96 | 20 | 100/60-120/80 |
| 3 | 25.6 | 24.9 | 0.7 | 35.1 | 30.3 | 4.8 | 1.2 | 5.2 | 105 | 72 | 120 | 78 | 15 | 6 | 72 | 124 | 52 | 115/75-120/82 |
| 4 | 34.4 | 31.1 | 3.3 | 34.5 | 30.3 | 4.2 | 4.1 | 5.2 | 95 | 65 | 130 | 85 | 35 | 20 | 52 | 84 | 32 | 90/70-140/100 |
| 5 | 27.4 | 26.7 | 0.7 | 34.5 | 31.6 | 2.9 | 1.3 | 4.0 | 105 | 70 | 115 | 80 | 10 | 10 | 76 | 110 | 34 | 105/70-130/100 |
| 5 | 28.7 | 27.6 | 1.1 | 33.8 | 31.9 | 1.9 | 1.4 | 2.0 | 90 | 70 | 114 | 80 | 24 | 10 | 72 | 112 | 40 | |
| 5 | 28.6 | 26.7 | 1.9 | 33.4 | 29.7 | 3.7 | 2.2 | 3.7 | 100 | 70 | 112 | 85 | 12 | 15 | 82 | 120 | 38 | |
| 5 | 30.0 | 28.7 | 1.3 | 34.5 | 32.7 | 1.8 | 2.1 | 2.5 | 100 | 70 | 118 | 84 | 18 | 14 | 80 | 120 | 40 | |
| 5 | 26.9 | 25.9 | 1.0 | 33.5 | 30.4 | 3.1 | 1.1 | 4.0 | 90 | 70 | 110 | 80 | 20 | 10 | 72 | 100 | 28 | |
| 5 | 32.6 | 29.1 | 3.5 | 34.8 | 32.4 | 2.4 | 4.1 | 2.5 | 98 | 68 | 112 | 85 | 14 | 17 | 76 | 108 | 32 | |
| 5 | 29.4 | 27.3 | 2.1 | 33.1 | 29.8 | 3.3 | 2.6 | 4.3 | 95 | 70 | 112 | 82 | 17 | 12 | 72 | 104 | 32 | |
| 5 | 28.2 | 27.3 | 0.9 | 33.9 | 31.5 | 2.4 | 1.7 | 3.5 | 95 | 70 | 114 | 85 | 19 | 15 | 72 | 108 | 36 | |
| 5 | 26.6 | 25.7 | 0.9 | 31.4 | 26.0 | 5.4 | 1.3 | 5.6 | 90 | 60 | 115 | 80 | 25 | 20 | 60 | 100 | 40 | |
| 6 | 33.7 | 29.7 | 4.0 | 34.1 | 32.9 | 1.2 | 4.3 | 2.6 | 120 | 85 | 148 | 98 | 28 | 13 | 60 | 104 | 44 | 120/85-150/110 |
| Average | 29.0 | 27.2 | 1.8 | 33.6 | 30.4 | 3.2 | 2.2 | 4.0 | 99 | 69 | 118 | 83 | 19 | 14 | 69 | 105 | 36 | |

TABLE 2.—*Effect of Smoking Two Corn Silk Cigarets on the Cutaneous Temperatures of the Extremities, Blood Pressure and Pulse Rate*

| | Average Cutaneous Temperatures, Degrees C. | | | | | | | | Blood Pressure, Mm. of Mercury | | | | | | Pulse Rate, Beats per Minute | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Toes | | | Fingers | | | Maximal Change in a Single Digit | | Basal | | During Smoking | | Increase | | | | |
| Subject | Basal | After Smoking | Change | Basal | After Smoking | Change | Toes | Fingers | Systolic | Diastolic | Systolic | Diastolic | Systolic | Diastolic | Basal | During Smoking | Increase |
| 1 | 25.0 | 25.1 | +0.1 | 31.1 | 30.1 | −1.0 | +0.2 | −1.2 | 105 | 60 | 110 | 70 | 5 | 10 | 72 | 76 | 4 |
| 2 | 26.5 | 25.1 | −1.4 | 29.5 | 28.4 | −1.1 | −1.5 | −2.0 | 105 | 60 | 105 | 65 | 0 | 5 | 60 | 64 | 4 |
| 3 | 28.3 | 27.6 | −0.7 | 34.5 | 34.1 | −0.4 | −1.6 | −0.7 | 100 | 60 | 100 | 60 | 0 | 0 | 68 | 72 | 4 |
| 5 | 29.0 | 29.7 | +0.7 | 33.4 | 33.7 | +0.3 | +1.1 | +0.5 | 95 | 70 | 100 | 70 | 5 | 0 | 72 | 80 | 8 |
| 5 | 26.7 | 26.8 | +0.1 | 32.9 | 32.3 | −0.6 | +0.1 | −0.7 | 90 | 60 | 95 | 65 | 5 | 5 | 76 | 76 | 0 |
| Average | 27.1 | 26.9 | −0.2 | 32.3 | 31.7 | −0.6 | −0.3 | −0.8 | 99 | 62 | 102 | 66 | 3 | 4 | 70 | 74 | 4 |

18. Sheard, C., and Williams, M. M. D.: Skin Temperatures of the Extremities and Basal Metabolic Rates in Individuals Having Normal Circulation, Proc. Staff Meet., Mayo Clin. **15**: 758-762 (Nov. 27) 1940.

between the cutaneous temperature of the toes and the basal metabolic rate. Figure 3 shows further evidence of this relation. After the smoking of two standard cigarets the variation of the decrease of the cutaneous temperatures and the relation with the basal metabolic rate are evident. Figure 4 shows the effect of smoking

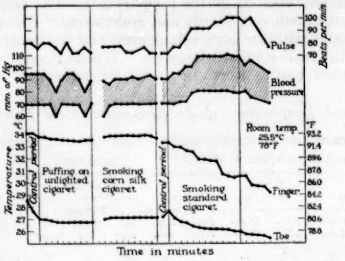


Fig. 1.—Effect of puffing on an unlighted cigaret, smoking two corn silk cigarets and smoking two standard cigarets on the cutaneous temperature of the extremities, blood pressure and pulse rate of the same subject. The cutaneous temperature curves of only one toe and one finger are shown. The control period in each instance was thirty minutes.

two standard cigarets on the basal metabolic rate and the effect of smoking two corn silk cigarets. For these particular subjects the basal metabolic rate increased with the smoking of two standard cigarets and decreased with the smoking of two corn silk cigarets.

Group IV. *Electrocardiography.* All tracings taken after the smoking of standard cigarets resulted in an increase of heart rate averaging between 15 and 36 beats per minute. A decrease of the amplitude of the T waves was noted for all subjects. The average decrease was between 1 and 2 mm. in all leads, and in a few instances the T waves in lead 3 became isoelectric. The greatest decrease of amplitude of T waves was noted after the smoking of standard cigarets. The tracings taken after the subject had smoked corn silk cigarets did not show any increase of heart rate or, at most, 5 beats per minute. The majority of these

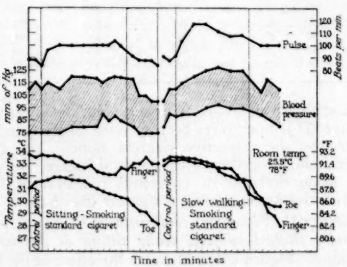


Fig. 2.—Effect of smoking two standard cigarets on the cutaneous temperatures of the extremities, the blood pressure and the pulse rate of the same subject while sitting and during slow walking. Note the decrease of the cutaneous temperature.

tracings after the smoking of corn silk cigarets did not show any change of amplitude of the T waves, the maximal decrease of amplitude of the T waves ranged between 0.5 and 1.0 mm. and in 3 instances there was a slight increase of amplitude of the T waves. Changes of amplitude of the QRS were negligible and in no instance was there an increase of the PR or the QRS intervals. Figure 5 demonstrates the typical electrocardiographic changes on the same subject on different days under the foregoing conditions.

Group V. *Intravenous administration of nicotine.* With the intravenous administration of isotonic solution of sodium chloride for fifteen minutes previous to the injection of nicotine there was a slight decrease of the cutaneous temperature of the extremities of 2 of the subjects. After the administration of 2 mg. of nicotine there was a sharp decrease of the cutaneous temperatures of the extremities of all subjects, at least parallel to that of smoking two standard cigarets and in 2 instances greater than that obtained by smoking two standard cigarets. Figure 6 demonstrates the changes of cutaneous temperatures after the smoking of corn silk and standard cigarets and after intravenous administration of nicotine.

The electrocardiographic tracings taken during the intravenous administration of isotonic solution of sodium chloride did not show any increase of the heart rate, and in 1 instance the tracing showed a decrease

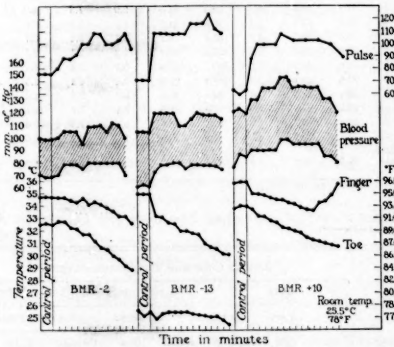


Fig. 3.—Effect of smoking two standard cigarets on the cutaneous temperature of the extremities, the blood pressure and the pulse rate of 3 normal subjects characterized by three different basal metabolic rates. When the basal metabolic rate is low the cutaneous temperature of the toes is correspondingly low; when the basal metabolic rate is high the cutaneous temperature of the toes is high.

of the heart rate. There was either no change of the amplitude of the T waves or a maximal decrease of between 0.5 and 1.0 mm. After the intravenous administration of nicotine the tracings taken resulted in an average increase of heart rate of between 30 and 40 beats per minute. A decrease of amplitude of the T waves averaging between 1 and 3 mm. in all leads occurred in all subjects, and in a few instances the T waves demonstrated negativity in lead 3. Changes of amplitude of the QRS were negligible, and in no instance was there an increase of the PR or the QRS intervals. Figure 5 demonstrates the typical electrocardiographic changes on the same subject on different days under the foregoing conditions.

Group VI. *Blood pressure including the cold pressor test and pulse rates.* The average basal blood pressure for fourteen observations before smoking was 99 mm. of mercury systolic with a range from 90 to 120, while the average basal diastolic blood pressure was 69 mm. of mercury with a range from 60 to 85 (table 1). During the smoking of two standard cigarets the average

blood pressure increased 19 mm. of mercury for the systolic and 14 mm. of mercury for the diastolic, with a range of 10 to 35 in the systolic and 6 to 20 in the diastolic. The average basal pulse rate was 69 beats per minute, with a range from 48 to 82 beats per minute. During smoking the pulse rate increased an average of 36 beats per minute, with a range from 20 to 52 beats per minute. When two corn silk cigarets were smoked the average basal blood pressure was 99 mm. of mercury for the systolic and 62 for the diastolic (table 2). The average increase during the smoking of two corn silk cigarets was 3 mm. of mercury in the systolic and 4 in the diastolic. The pulse rate likewise was increased only 4 beats per minute from the basal level of 70 beats per minute. This was in contrast to an increase of 36 beats per minute during the smoking of two standard cigarets. There were 3 normal reactors to the cold pressor test and 3 hyperreactors to the cold pressor test.

## COMMENT

While the subjects were resting in a supine position and smoking standard cigarets there was a decrease of the cutaneous temperatures of the extremities, which is evidence of peripheral vasoconstriction. Maddock and Coller[19] have shown that when the sympathetic nerves to the feet were blocked the smoking of standard cigarets did not produce a decrease of the cutaneous temperatures. They concluded that the vasoconstriction was due to stimulation of the sympathetic nervous system. In cases in which lumbar sympathectomy had been performed we have observed the same results. In our observations the decrease of cutaneous temperatures continued for half an hour to one hour after smoking ceased. This decrease of cutaneous temperatures has been noted generally by other observers in similar studies. While a subject was smoking corn silk cigarets the decrease of cutaneous temperatures was negligible, and similar results were observed by Weatherby[11] and by Maddock and Coller,[19] using cigarets without nicotine. Further, the effects of smoking corn silk cigarets were not irritating, as evidenced by the absence of nasopharyngeal irritation and coughing. It was observed that French ashless cigaret papers with standard cigaret tobacco or the British cigaret filter holder did not nullify the decrease of cutaneous temperatures when the subject was smoking standard cigarets. The latter observation confirms the previous report of Moyer and Maddock.[20]

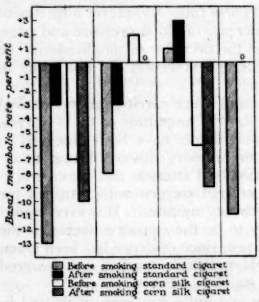


Fig. 4.—Effect of smoking two standard cigarets and two corn silk cigarets on the basal metabolic rates of 4 subjects. The fourth subject did not smoke corn silk cigarets.

In these studies with standard cigarets the decrease of the cutaneous temperature of the toes was less than that of the fingers. This difference may be due to the effect of the small amount of nicotine on the sympathetic nervous system. Generally, in the simple heat regulatory mechanism of the extremities, vasoconstriction occurs first and more decidedly in the feet and later in the hands if there is a demand for further regulation.

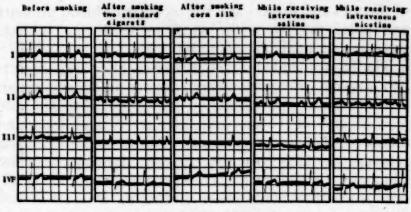


Fig. 5.—Electrocardiographic tracings taken on the same subject on different days. In the tracings the heart rate is the same before smoking, after smoking corn silk and while receiving saline solution intravenously, and the amplitude of the T waves does not vary more than from 0.5 to 1.0 mm. The heart rate after the subject had smoked two standard cigarets was 100 beats per minute; while the subject was receiving nicotine intravenously the rate was 110 beats per minute. The amplitude of the T waves decreased about 1 mm. more as the result of intravenous administration of nicotine than during the smoking of two standard cigarets. There was a definite decrease both from smoking two standard cigarets and from the intravenous administration of nicotine, averaging between 1 and 3 mm.

We agree with Evans and Stewart[12] that little or no change took place when the subject puffed on an unlighted cigaret with the normal depth and frequency used in smoking. The degree of response to smoking varies among individuals and for the same subject from day to day, which was also observed by Wright and Moffat[8] and by Mulinos and Shulman.[21] As a result, new basal levels for each study must be obtained for blood pressure, basal metabolic rates and cutaneous temperatures.

Although most smoking occurs while a person is sitting or walking, it appears from the literature that little work has been done under these conditions. Weatherby[11] found that the decrease of cutaneous temperatures after the smoking of standard cigarets was

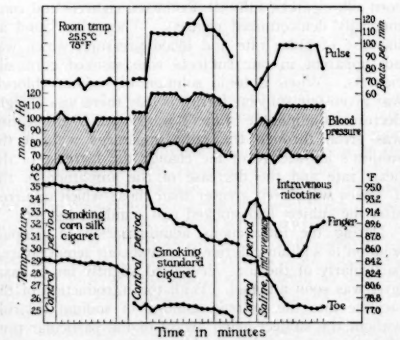


Fig. 6.—Effect of smoking two corn silk cigarets, of smoking two standard cigarets and of an intravenous injection of 2 mg. of nicotine on the cutaneous temperature of the extremities, the blood pressure and the pulse rate of the same person.

19. Maddock, W. G., and Coller, F. A.: Peripheral Vasoconstriction by Tobacco and Its Relation to Thromboangiitis Obliterans, Ann. Surg. **98**: 70-81 (July) 1933.

20. Moyer, C. A., and Maddock, W. G.: Peripheral Vasospasm from Tobacco, Arch. Surg. **40**: 277-285 (Feb.) 1940.

21. Mulinos, M. G., and Shulman, I.: The Effects of Cigaret Smoking and Deep Breathing on the Peripheral Vascular System Studied by Five Methods, Am. J. M. Sc. **199**: 708-720 (May) 1940.

neutralized by mild physical activity. In our subjects who were fully clothed and who smoked while sitting the usual drop of cutaneous temperature and increase of blood pressure and pulse rate occurred. When our subjects were clothed and were allowed to walk about the psychrometric room after the smoking of two standard cigarets the decrease of cutaneous temperatures of the toes and fingers and the increase of blood pressure and pulse rate were the same as while the subjects were at rest under basal conditions.

The basal metabolic rate increased after our subjects had smoked standard cigarets under basal conditions. These results are similar to those of Goddard and Voss [22] and of Evans and Stewart,[12] who found an increase in 69 per cent of their subjects. Three of our subjects, smoking corn silk cigarets, showed a decrease of basal metabolic rate. These changes may be significant, since Main [23] has observed that the alveolar carbon dioxide tension was lowered after the smoking of standard cigarets, while nicotine free cigarets produced very much less effect.

When the subjects smoked standard cigarets the most common changes in the electrocardiographic tracing were an increase of heart rate and a lowering of the amplitude of the T waves in all leads. Similar changes were observed by Graybiel, Starr and White,[24] although their subjects smoked only one cigaret before the tracing was taken. They ascribed these changes to the action of the nicotine on the cardiac ganglions, and they also found that these changes were similar to those observed in atropinization. Therefore they concluded that nicotine causes parasympathetic paralysis and sympathetic stimulation. When our subjects smoked corn silk cigarets there was a negligible increase of heart rate with no appreciable lowering of the amplitude of the T waves; in fact in some instances there was a slight elevation. In contrast, Evans and Stewart [12] found a decrease of amplitude of the T waves in 71 per cent of their cases after their subjects had smoked corn silk cigarets, fully denicotinized cigarets and commercially denicotinized cigarets. They also found an increase of pulse rate and blood pressure, which was not apparent in our subjects who smoked corn silk cigarets. When isotonic solution of sodium chloride was given our subjects intravenously there was a slight decrease of amplitude of the T waves, but when nicotine was given through the same apparatus without the subject's knowledge of the change the increase of the heart rate and the decrease of the amplitude of the T waves were even greater than those which occurred after the subject had smoked two standard cigarets.

During the intravenous administration of isotonic solution of sodium chloride the cutaneous temperatures, particularly of the toes, decreased slightly but a basal level was soon attained. With the introduction of the nicotine into the isotonic solution of sodium chloride without the subject being aware of the particular time of the injection of the nicotine, cutaneous temperatures of the extremities decreased in a similar manner to that obtained after the smoking of two standard cigarets, but the decrease was more rapid and of greater magnitude. As this decrease did not occur while the subject was smoking corn silk cigarets, it appears that the effect may be due primarily to the nicotine content of standard cigarets. These results are similar to those previously obtained by Maddock and Coller [19] and by Moyer and Maddock [20] and are interesting in the light of the studies of Haag,[25] who found while working with animals that the effect of smoke solutions was proportional to their nicotine content.

It appears that intravenously administered isotonic solution of sodium chloride has little effect on the electrocardiographic tracing but that 2 mg. of intravenously administered nicotine accounts for the changes observed. Many investigators have observed that either stimulation of the sympathetic nerves or injection of epinephrine causes an increase of amplitude of the T waves, while stimulation of the vagus nerves or the injection of acetylcholine causes a decrease of their amplitude. As stated previously, changes of the T waves after administration of nicotine are similar to the changes resulting from atropinization. It appears likely that the action of nicotine on the vagus and sympathetic ganglions would account for the increase of blood pressure and pulse rate. Whatever adjustment the heart makes for increase of blood pressure and pulse rate must account for the decrease of amplitude of the T waves, and the latter phenomenon did not occur in the absence of nicotine.

While our observations were carried out on normal subjects, similar decreases of amplitude of the T waves, although of greater magnitude, have been observed in persons suffering from coronary disease during anoxemia tests, as performed by Patterson and his co-workers,[26] who used 10 per cent oxygen with nitrogen for as long as fifteen to twenty minutes. However, anoxemia appears unlikely to be the causative factor of the changes that we observed, since evidence has been given that the alveolar carbon dioxide tension was lowered after the smoking of standard cigarets.

The blood pressure and pulse rate were increased in all our subjects as a result of smoking standard cigarets, confirming previous observations of many investigators. The increase persisted while the subject was smoking and not longer than fifteen minutes after he stopped smoking. However, there was no increase of blood pressure or pulse rate as the result of smoking corn silk cigarets. This observation was noted by Main [23] and by Maddock and Coller [19] using nicotine free cigarets but is at variance with the results of Evans and Stewart,[12] who obtained similar increase with corn silk and denicotinized cigarets. It was found that French ashless cigaret papers and a popular British cigaret filter holder used with standard tobacco gave the same results as when standard cigarets were used alone, and that when they were used with corn silk they gave the same results as when corn silk was used alone. When nicotine was administered intravenously the increase of blood pressure and pulse rate was similar to that encountered after the smoking of two standard cigarets.

Apparently the cold pressor test gives little if any insight into the reaction produced by tobacco on the blood pressure of a normal subject. One subject, a hyperreactor to the cold pressor test, was a normal

22. Goddard, V. R., and Voss, J. G.: The Immediate Effect of Cigaret Smoking on Basal Metabolic Rates of University Men and Women, J. Lab. & Clin. Med. **27**: 787-791 (March) 1942.

23. Main, R. J.: Acute Effects of Smoking on Respiration and Circulation, Proc. Soc. Exper. Biol. & Med. **48**: 495-500 (Nov.) 1941.

24. Graybiel, A.; Starr, R. S., and White, P. D.: Electrocardiographic Changes Following the Inhalation of Tobacco Smoke, Am. Heart J. **15**: 89-99 (Jan.) 1938.

25. Haag, H. B.: The Physiologic Activity of Cigaret Smoke Solutions as Related to Their Nicotine Content, J. Lab. & Clin. Med. **25**: 610-618 (March) 1940.

26. Patterson, J. E.; Clark, T. W., and Levy, R. L.: Comparison of Electrocardiographic Changes Observed During "Anoxemia Test" on Normal Persons and on Patients with Coronary Sclerosis, Am. Heart J. **23**: 837-846 (June) 1942.

reactor to tobacco. Likewise, a normal reactor to the cold pressor test was a hyperreactor to tobacco. As other observers have seen, there are reactors to cold and reactors to tobacco. The blood pressure of other subjects reacted the same both to the cold pressor test and to tobacco.

After our subjects had smoked standard cigarets it was found that the blood pressure and pulse rate and the electrocardiogram returned to normal within five to fifteen minutes. However, the peripheral vascular constriction indicated by the cutaneous temperatures of the extremities persisted from half an hour to an hour and in some cases much longer. These observations make us conclude, as did Maddock and Coller,[19] that the smoking of standard cigarets should be avoided in the presence of peripheral vascular disease. As Pratt [27] has suggested, the habit of giving an injured soldier a cigaret is not advisable if arterial injury has occurred, as segmental spasm of the artery is common in such trauma and the vasoconstriction in a person sensitive to tobacco may cause irreparable damage.

SUMMARY

Observations on six normal subjects yielded the following results:

1. When the subjects were resting in a supine position after smoking two standard cigarets or French ashless cigaret paper with standard tobacco or standard cigarets in the British cigaret filter holder the cutaneous temperatures of the extremities of all the subjects decreased. In contrast, when two corn silk cigarets were smoked there was little if any change of the cutaneous temperatures of the extremities.

2. When fully clothed normal subjects were sitting or engaged in slow walking, the temperatures of the extremities also decreased to the same degree after the smoking of two standard cigarets as while the subjects were in a resting, supine position.

3. An increase of the basal metabolic rate occurred after the smoking of two standard cigarets, whereas the rate decreased after the smoking of two corn silk cigarets.

4. Consistent changes of the electrocardiographic tracing developed after the smoking of two standard cigarets. The changes consisted in an increase of heart rate and a lowering of the amplitude of the T wave. Such changes were negligible after the smoking of corn silk cigarets.

5. When saline solution was given intravenously previous to the intravenous injection of nicotine there was at first a slight drop of the cutaneous temperatures of the extremities, but when nicotine was added to the solution the decrease was rapid and pronounced. After the injection of nicotine the electrocardiographic tracing demonstrated a definite increase of heart rate and a lowering of the T waves even greater than that seen after the subjects had smoked two standard cigarets.

6. There was an increase of blood pressure and pulse rate after either the smoking of two standard cigarets or the intravenous injection of 2 mg. of nicotine. After the smoking of two corn silk cigarets there was little or no change of blood pressure and pulse rate.

7. While some subjects may show a parallelism between hyperreaction to the cold pressor test and hypersensitiveness to tobacco, many other persons may hyperreact to one or the other alone.

27. Pratt, G. H.: The Importance of a Knowledge of Vascular Surgery in World War II, editorial, Am. J. Surg. **56**: 335-336 (May) 1942.

# THE CAUSE OF DEATH IN RHEUMATIC HEART DISEASE IN ADULTS

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AND
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Although rheumatic fever has been the subject of numerous and extensive studies, many aspects of its natural history still remain open to scientific investigation. This is particularly true with reference to rheumatic fever and rheumatic heart disease in adults, since the greatest number of investigations have been made on patients during their childhood and adolescence. The number of adults with rheumatic fever is not negligible. According to Cohn and Lingg [1] the percentage of these cases occurring in early maturity is 42, embracing, of course, the survivors from childhood (23 per cent) and adolescence (9 per cent) plus the new cases which occur at this age period (10 per cent).

TABLE 1.—*Causes of Death According to Bland and Jones's Classification*

| | | |
|---|---|---|
| A. | Acute rheumatic fever | 2 |
| | Acute rheumatic fever and congestive failure | 22 |
| | Congestive failure | 35* |
| B. | Bacterial endocarditis | 18 |
| C. | Other causes related to the heart | 14 |
| D. | Causes unrelated to the heart | 8 |
| E. | Unknown causes | 1 |
| | Total cases | 100 |

* Of these 35 cases with congestive failure without evidence of acute rheumatic fever, 25 showed important complications, some of which were doubtless responsible for the congestive failure itself or for death; these complications were as follows: pulmonary infarction in 10 cases (7 with normal rhythm and 3 with auricular fibrillation), bronchopneumonia in 10 cases (5 with normal rhythm and 5 with auricular fibrillation) and auricular fibrillation in the remaining 5 cases. Thus auricular fibrillation was present in 13 of these cases.

TABLE 2.—*Number of Patients by Decades*

| Decades | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 |
|---|---|---|---|---|---|---|---|
| Number of patients | 16 | 27 | 15 | 23 | 13 | 5 | 1 |

The present paper submits an analysis of 100 unselected fatal cases of rheumatic heart disease over the age of 20 years at death and examined post mortem. They were collected from the records of the Massachusetts General Hospital and include patients from 1927 to 1943 inclusive. On looking at the figures one should take into account the cause of death. Since any one of two, three or four factors may be the cause of death, it is often difficult to ascertain which is the main determinant factor. Nevertheless we have made an effort to determine the cause of death as precisely as possible. The myocardium was examined for active rheumatism.

In an attempt to analyze these cases according to Bland and Jones's [2] classification of causes of death (in 306 young persons with rheumatic fever or its sequelae, the great majority of whom were children), our own results given in table 1 were obtained.

Grouped in decades at the time of death, the number of patients was classified as in table 2.

1. Cohn, A. E., and Lingg, C.: The Natural History of Rheumatic Cardiac Disease, J. A. M. A. **121**: 1-8 (Jan. 2) 1943.
2. Bland, E. F., and Jones, T. D.: Fatal Rheumatic Fever, Arch. Int. Med. **61**: 161-171 (Feb.) 1938.

Classified by sex, there were 51 males and 49 females.

In the 57 cases in which data were obtained, the age at onset of the rheumatic fever was as shown in table 3. The mean duration of the disease was 24.7 years in this group.

TABLE 3.—*Age at Onset of Fever*

| Decades | 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 |
|---|---|---|---|---|---|---|
| Number of patients | 10 | 30 | 11 | 4 | 0 | 2 |

TABLE 4.—*Duration in Years as Related to Age in Decades*

| Decades | 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 |
|---|---|---|---|---|---|---|
| Duration | 26.4 | 28 | 23.7 | 18.5 | .. | 27 |

TABLE 5.—*Age at Death as Related to Cause of Death*

| Decades | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | Total |
|---|---|---|---|---|---|---|---|---|
| Rheumatic fever, acute | .. | 1 | 1 | .. | .. | .. | .. | 2 |
| Acute rheumatic fever and congestive failure | 5 | 6 | 5 | 4 | 1 | 1 | .. | 22 |
| Congestive failure | 3 | 12 | 6 | 6 | 7 | .. | 1 | 35 |
| Bacterial endocarditis | 7 | 6 | .. | 4 | .. | 1 | .. | 18 |
| Other causes related to heart | 1 | 1 | 3 | 6 | 2 | 1 | .. | 14 |
| Causes unrelated to heart | .. | 1 | .. | 2 | 3 | 2 | .. | 8 |
| Unknown causes | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Number of patients | 16 | 27 | 15 | 23 | 13 | 5 | 1 | 100 |

TABLE 6.—*Sex as Related to Cause of Death*

| | Male | Female |
|---|---|---|
| Rheumatic fever, acute | 0 | 2 |
| Acute rheumatic fever and congestive failure | 14 | 8 |
| Congestive failure | 19 | 16 |
| Bacterial endocarditis | 11 | 7 |
| Other causes related to heart | 4 | 10 |
| Causes unrelated to heart | 3 | 5 |
| Unknown causes | .. | 1 |
| Total | 51 | 49 |

The duration in years as related to the age in decades at the onset of the disease is given in table 4.

The age at the time of death as related to the cause of death is given in table 5.

The sex as related to the cause of death is given in table 6.

The duration of the disease in the group of 57 patients as related to the cause of death is given in table 7.

In table 8 the valvular lesions and mean heart weight are distributed according to the cause of death.

In table 9 we have compared the figures which we obtained with those compiled by Bland and Jones.

## COMMENT

In studying table 9 one may note that acute rheumatic fever as a cause of death occurs to a lesser extent in adults than in children; in the former group it was present in only 24 per cent of the cases, while in the latter group it was present in 75 per cent. Congestive failure without the exciting factor of acute rheumatic fever is a minor factor as a cause of death in children (only 7 per cent), while in adults it is the chief cause responsible for death (35 per cent). The latter figure is quite close to that given by Laws and Levine [3] for patients from the Peter Bent Brigham Hospital. These writers, working on a group of 148 patients of which the youngest was 12 years old, encountered congestive failure as a cause of death in 33.1 per cent of the cases. Martin,[4] studying the cause of death in 431 children having rheumatic fever, found that 80 per cent of the deaths were due to rheumatic infection and less than 1 per cent to congestive heart failure.

The percentage of deaths in adults due to congestive failure deserves, nevertheless, a special comment concerning the concomitance of other factors which undoubtedly represent an important role in the death of such patients. We are referring particularly to pulmonary infarction, bronchopneumonia and auricular fibrillation. In a total of 35 cases of congestive failure, auricular fibrillation occurred thirteen times, bronchopneumonia or pneumonia ten times and pulmonary infarction ten times. One cannot underestimate the importance of auricular fibrillation as a precipitating factor in many cases of congestive failure. Arteriosclerosis and hypertension are still to be regarded as complicating elements in some instances. Thus there remain few patients for whose death congestive failure appears to be the only and isolated factor directly responsible.

TABLE 7.—*Duration of Disease as Related to Cause of Death*

| | Duration in Years | No. of Cases |
|---|---|---|
| Rheumatic fever, acute | 23 | 2 |
| Acute rheumatic fever and congestive failure | 10.3 | 14 |
| Congestive failure | 31.6 | 22 |
| Bacterial endocarditis | 17.9 | 9 |
| Other causes related to heart | 28.6 | 7 |
| Causes unrelated to heart | 41.7 | 3 |
| Unknown causes | .... | .. |

TABLE 8.—*Valvular Lesions and Mean Heart Weight Distributed According to Cause of Death*

| | Valvular Lesions * | | | | | | | | Heart |
|---|---|---|---|---|---|---|---|---|---|
| | M | A | MA | MT | MAT | MAP | MATP | Total | Weight |
| Rheumatic fever, acute | .. | .. | 2 | .. | .. | .. | .. | 2 | 322 |
| Acute rheumatic fever and congestive failure | 2 | 1 | 10 | .. | 8 | 1 | .. | 22 | 589 |
| Congestive failure | 5 | 3 | 20 | 1 | 5 | .. | 1 | 35 | 508 |
| Bacterial endocarditis | 6 | .. | 9 | .. | 3 | .. | .. | 18 | 483 |
| Other causes related to heart | 2 | 1 | 8 | .. | 3 | .. | .. | 14 | 378 |
| Causes unrelated to heart | 4 | .. | 4 | .. | .. | .. | .. | 8 | 325 |
| Unknown causes | .. | .. | .. | 1 | .. | .. | .. | 1 | 325 |
| Total | 19 | 5 | 53 | 2 | 19 | 1 | 1 | 100 | 420 |

* M = mitral, A = aortic, T = tricuspid, P = pulmonary.

TABLE 9.—*Authors' Observations Compared with Those of Bland and Jones*

| | Bland and Jones | Jucá and White |
|---|---|---|
| Rheumatic fever, acute | 8% | 2% |
| Acute rheumatic fever and congestive failure | 67% | 22% |
| Congestive failure | 7% | 35% |
| Bacterial endocarditis | 6% | 18% |
| Other causes related to heart | 3% | 14% |
| Causes unrelated to heart | 5% | 8% |
| Unknown causes | 4% | 1% |

Bacterial endocarditis was seen in 18 per cent of the patients. This is undoubtedly a high figure, but it probably represents an accurate one in daily practice with adult patients. For comparison one may note the

3. Laws, C. L., and Levine, S. A.: Clinical Notes on Rheumatic Heart Disease, with Special Reference to the Cause of Death, Am. J. M. Sc. **186**: 833-849 (Dec.) 1933.

4. Martin, A. T.: Twenty Years' Observation of 1,438 Children with Rheumatic Heart Disease, J. A. M. A. **117**: 1663-1670 (Nov. 15) 1941.

figures given for children by Bland and Jones [2] (6 per cent), Stroud [5] (6 per cent) and May Wilson [6] (2 per cent). On the other hand, Davis,[7] working in a mixed group of children and adult patients, encountered bacterial endocarditis in 13.7 per cent, and Laws and Levine,[3] dealing only with patients over 12, in 29 per cent of the cases.

Classified in the group "other causes related to heart" are 5 cases of myocardial infarction, 3 of cerebral embolism and 1 of mesenteric embolism.

In the group "causes unrelated to heart" there are 1 carcinoma, 1 lymphoblastoma (Hodgkin's type), 2 aortic thrombus, 1 bronchopneumonia, 1 necrosis of the liver, 1 hepatic cirrhosis and 1 cholangitis.

The greatest mortality occurred in the fourth decade, that is, in patients between 30 and 39 years of age, the oldest patient being an 82 year old woman afflicted with aortic and mitral lesions, who died in congestive failure thirty-two years after the onset of her rheumatic heart disease. In this case, as in some reported by White and Bland,[8] rheumatic lesions "may be regarded as largely of academic interest, provided rheumatic reactivation does not take place."

In the present series, with reference to sex in rheumatic fever, the figures obtained were analogous to the figures found in statistics dealing with many thousands of cases. In other words, the number of cases encountered in the two sexes is about the same.

The largest number of first attacks of rheumatic fever, more than 50 per cent of the total, occurred in the second decade, that is, between 10 and 19 years of age.

It is interesting to note that in the table in which we have recorded the duration of disease as related to cause of death the minimum duration was found in the group of bacterial endocarditis and the maximum in the group of causes unrelated to the heart.

In the table dealing with valvular lesions we see that in most of the cases there was involvement of several valves. It is also curious to note that in the group "bacterial endocarditis" the association of mitral and aortic lesions predominates. It seems that in rheumatic heart disease those patients who show the combination of mitral and aortic lesions are more likely to get bacterial endocarditis.

The heart weight was maximal in the series of patients who died in congestive failure and minimal for those of the group "causes unrelated to heart."

In a consideration of valvular lesions found at death, the average duration of life after the first attack of rheumatic fever was mitral 22, aortic 37, mitral and aortic 30, and mitral, aortic and tricuspid 18 years. One may infer from these figures that isolated aortic involvement is the best tolerated valvular lesion. The group with unassociated mitral lesions had an average of life shorter than the combined mitral and aortic lesions, but the number of cases in each group was inadequate for final conclusions in this respect.

SUMMARY

We have studied the cause of death in 100 unselected fatal cases of rheumatic heart disease over the age of 20 years. All of the patients were submitted to post-mortem examination. The relationship of age, sex, expectancy of life, valvular lesions, and heart weight to the cause of death was considered. It was found that congestive failure without evident acute rheumatism accounted for 35 per cent of the fatalities, acute rheumatic fever and congestive failure for 22 per cent, bacterial endocarditis for 18 per cent, other causes related to the heart for 14 per cent, causes unrelated to the heart for 8 per cent, acute rheumatic fever alone for 2 per cent and unknown causes for 1 per cent.

5. Stroud, W. D., and Twaddle, P.: Fifteen Years' Observation of Children with Rheumatic Heart Disease, J. A. M. A. **114**: 629-634 (Feb. 24) 1940.

6. Wilson, M. G.; Lingg, C., and Croxford, G.: Statistical Studies Bearing on Problems in Classification of Heart Disease: Heart Disease in Children, Am. Heart J. **4**: 164-196 (Dec.) 1928.

7. Davis, D., and Weiss, S.: Rheumatic Heart Disease, Am. Heart J **7**: 146-156 (Dec.) 1931.

8. White, P. D., and Bland, E. F.: Mitral Stenosis After Eighty, with Especial Reference to Dr. Herman F. Vickery, J. A. M. A. **116**: 2001-2004 (May 3) 1941.

## BROMIDE INTOXICATION

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In recent years many writers [1] have described the clinical picture of bromide intoxication and have emphasized the importance and prevalence of this condition. The effect of these writings on the incidence of bromide poisoning, however, appears to have been slight. Bromide intoxication continues to be a common condition for two reasons: (1) the uncontrolled sale of many different patented pain remedies, many of which contain sodium or potassium bromide, and (2) the widespread use of this drug for prolonged periods by practicing physicians. Apparently it is still not generally realized that bromides may produce severe intoxication, and the signs and symptoms of bromide intoxication are not always recognized when they appear. All too often the dosage of bromide is increased by the physician in order to combat the early signs of bromide intoxication, insomnia, restlessness, "dizziness," weakness and particularly headache, when the safer course would be to discontinue the drug and, if necessary, prescribe a different sedative. It should be remembered that bromides exert an accumulative effect and that bromide excretion and retention are intimately related to sodium chloride and fluid intake.

Of the 49 cases reported here the histories record that a physician was responsible for the excessive bromide intake in 28 instances. In 10 of the 20 cases seen at the North Carolina Baptist Hospital, and in 18 of the 29 cases reported from the Vanderbilt Hospital, bromide had been taken on the prescription of a physician. In most instances they were sent to the hospital by the physicians for diagnosis. Only 10 patients are known to have been poisoned because of excessive self medication with various patented pain remedies, including "Stanback," "B. C." and "Bromo-Seltzer." In 11 cases the source of the bromide was unknown.

My purpose in the present communication is to reemphasize the high incidence of bromide intoxication and to suggest, as others have previously done, that more caution be employed in the use of these compounds.

### CLINICAL STUDY

From January 1943 to December 1943, 20 cases of bromide poisoning were treated in the medical wards of the North Carolina Baptist Hospital, a relatively small service of 40 beds. Few have been the days

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1. Curran, F. J.: A Study of Fifty Cases of Bromide Psychosis, J. Nerv. & Ment. Dis. **88**: 163 (Aug.) 1938. Kitching, E. H.: Mental Symptoms in Bromide Intoxication, Brit. M. J. **1**: 754, 1942. Pilkington, F.: Bromide Therapy and Intoxication, ibid. **1**: 10, 1941. De Gowin,[3] Garrard,[5] Gundry,[9] Hanes and Yates,[2] Wagner and Bunbury.[4]

during the past year when this service has not been the host to from 1 to 3 such patients. The patients who have been admitted to the hospital represent only the more severe intoxications. A number of milder cases have been treated in the outpatient department and are not considered here. In addition to the cases seen at the North Carolina Baptist Hospital, this report includes 29 cases diagnosed as bromide intoxication over a three year period at the Vanderbilt University Hospital.

In this group of 49 persons there were 31 females and 18 males. This difference in sex incidence was most evident in the North Carolina Baptist Hospital group, in which 15 of the 20 cases occurred in females. The ages of the patients ranged from 9 to 80 years, most of the cases being fairly well distributed among those between the ages of 20 and 70.

The clinical picture of bromide intoxication has been described repeatedly but is still not widely recognized. Hanes and Yates [2] emphasized the importance of recognizing the early symptoms of headache, diminished power of concentration and nervousness. They pointed out the similarity of these mild toxic symptoms to those of the common psychoneuroses and the danger of the physician prescribing increased bromide to combat these symptoms, thus precipitating the more severe forms of intoxication.

The outstanding signs and symptoms recorded in the histories of the 49 cases reported here are, in order of frequency, (1) mental confusion, (2) stupor, (3) delusions, (4) headache, (5) hallucinations, (6) nervousness, (7) weakness, (8) disturbances in gait, (9) brown furry coating of the tongue, (10) palpitation, (11) slurring of speech, (12) irritability, (13) depression or elation, (14) insomnia, (15) "smothering spells," (16) "dizziness," (17) anorexia, (18) nausea and vomiting, (19) transitory visual disturbance and (20) transitory incontinence (table 1).

TABLE 1.—*Signs and Symptoms of Bromide Intoxication*

| Signs and Symptoms | Number of Cases |
|---|---|
| Mental confusion | 18 |
| Stupor | 15 |
| Delusions | 11 |
| Headache | 9 |
| Hallucinations | 9 |
| Nervousness | 7 |
| Weakness | 6 |
| Gait disturbance | 6 |
| Coated tongue | 5 |
| Palpitation | 4 |
| Slurred speech | 4 |
| Irritability | 3 |
| Depression | 3 |
| Dizziness | 3 |
| Memory defect | 2 |
| Smothering spells | 2 |
| Insomnia | 2 |
| Nausea and vomiting | 1 |
| Transitory blindness | 1 |
| Transitory incontinence | 1 |
| Anorexia | 1 |

A skin rash was noted in only 5 of the 49 cases. In 2 cases the rash was acneform in character; in 1 the appearance was typical of erythema nodosum. The eruptions were not adequately described in 2 cases. In 2 other instances vague indefinite skin lesions were noted but were not believed to be related to the bromism.

2. Hanes, F. M., and Yates, Anne: An Analysis of 400 Instances of Chronic Bromide Intoxication, South. M. J. **31**: 667 (June) 1939.

This low incidence of cutaneous eruptions is in agreement with the findings of most recent observers, who have pointed out that the occurrence of skin rash in bromism is not common and has been overemphasized in the past. There is no relationship between blood bromide level and cutaneous manifestations. De Gowin [3]

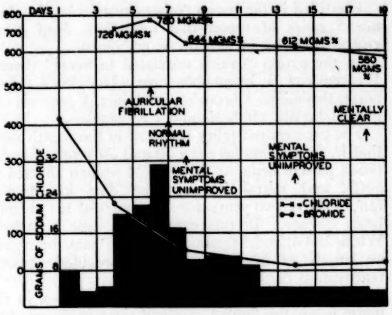


Chart 1 (M. D.).—Demonstration of the slow response in mental symptoms as contrasted with the prompt fall in blood bromide. An attack of paroxysmal auricular fibrillation occurred during the period of intensive sodium chloride therapy (20 to 30 Gm. daily).

cites the unpublished work of Kimberly, who concluded that the cutaneous manifestations that occasionally occur are due to idiosyncrasy rather than to the toxic effect of the drug. The low incidence of cutaneous manifestations would support this view.

Sixteen patients exhibited low grade elevations in temperature which disappeared after adequate treatment of the bromism. One patient, who was severely intoxicated, was confused and irrational and had considerable fever, varying between 39 and 40 C. (102.2-104 F.) for ten days. In addition, rigidity of the neck and a positive Kernig's sign made the diagnosis of meningitis likely. However, lumbar puncture revealed a normal spinal fluid under normal pressure. The spinal fluid contained 90 mg. per hundred cubic centimeters of bromide and the blood bromide level was 150 mg. per hundred cubic centimeters. The fever subsided and the meningeal signs slowly disappeared under treatment for the bromide poisoning.

In this series of cases there was no instance of bromism superimposed on an underlying major psychosis. In mental institutions, however, the incidence of bromism in such cases is quite high. Wagner and Bunbury [4] reported that in 1,000 routine admissions to the Colorado Psychopathic Hospital 77 patients showed appreciable amounts of bromide in the serum. In 44 of these the mental symptoms were caused or aggravated by the bromide. Garrard [5] found a blood bromide level above 50 mg. per hundred cubic centimeters in 27.5 per cent of 1,042 patients admitted consecutively to the North Carolina State Hospital for the Insane at Morganton over an eighteen months period of time. More than 4 per cent of the patients admitted had a blood bromide level above 150 mg. per hundred cubic centimeters, which the author considers the toxic level.

3. De Gowin, E. L., in discussion on Gundry.

4. Wagner, C. P., and Bunbury, D. Elizabeth: Incidence of Bromide Intoxication Among Psychotic Patients, J. A. M. A. **95**: 1725 (Dec. 6) 1930.

5. Garrard, R. L.: Bromide Therapy and Intoxication, North Carolina M. J. **3**: 597 (Nov.) 1942.

One of our patients (chart 1) had been committed to a state mental institution when members of his family brought him to the North Carolina Baptist Hospital for observation before assigning him to an institution for the insane. This patient's wife, incidentally, was in the hospital at that time suffering from an identical condition (chart 2). After having brought his wife to the hospital two weeks previously, he had returned home and had consumed what remained of a pint of salty medicine (sodium bromide) that had been prescribed for his wife and had been the cause of her illness. After adequate treatment for the bromide poisoning both patients left the hospital completely well.

It is unfortunate that patients are so frequently marked by the stigma that goes with admission to a mental institution, because of bromism, a condition that may be easily suspected from the clinical picture, readily confirmed by examination of the blood and adequately corrected by simple therapy. Actually the disease should not exist, for it is entirely preventable by the observance of a few simple rules guiding the use of bromide-containing medications.

### DISEASES ASSOCIATED WITH BROMISM

The most common associated and underlying diseases in this series were (1) functional nervous system disorders (anxiety state, neurasthenia, hysteria), (2) generalized arteriosclerosis, (3) cerebral arteriosclerosis, (4) heart disease, (5) malnutrition and avitaminosis, and (6) other drug intoxications, including acetanilid, phenobarbital and sulfonamide poisoning (table 2).

Aside from the high incidence of bromism in psychoneurotic and emotionally unstable patients, the condition occurs with some regularity in patients with certain other disorders. Patients with generalized arteriosclerosis and especially those with cerebral arteriosclerosis appear to be unusually susceptible to bromide intoxication. Anemia may often be a contributing factor, as was pointed out by Gundry.[6] In patients suffering from these conditions smaller amounts of bromide and lower blood bromide levels are required to produce the symptoms of bromism. For this reason it is impossible to set a fixed blood bromide level above which the symptoms of intoxication always appear and below which they are absent. In an otherwise healthy person a blood level of 150 mg. per hundred cubic centimeters is often associated with few or no symptoms, whereas in some patients with cerebral arteriosclerosis, malnutrition or anemia a blood level as low as 75 mg. per hundred cubic centimeters may be associated with the signs of severe intoxication.

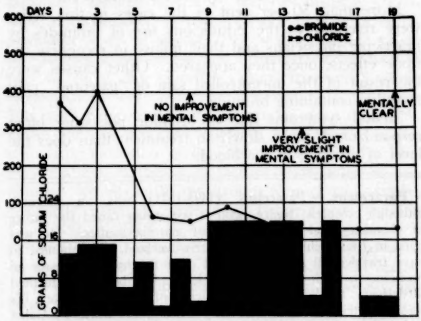


Chart 2 (R. D.).—Again illustrating the slow improvement in the mental symptoms and the prompt fall in the blood bromide level following intensive sodium chloride therapy.

6. Gundry, L. P.: Bromide Intoxication: Report of 15 Cases, J. A. M. A. **113**: 466 (Aug. 5) 1939.

TABLE 2.—*Underlying and Associated Disease in Forty-Nine Cases of Bromism*

| Associated Disease | Number of Cases |
|---|---|
| Functional nervous system disorders (including anxiety state, neurasthenia, hysteria) | 17 |
| Generalized arteriosclerosis | 10 |
| Cerebral arteriosclerosis | 9 |
| Heart disease | 9 |
| Malnutrition and avitaminosis | 7 |
| Other drug intoxications | 5 |
| Hyperthyroidism | 3 |
| Prostatic hyperplasia | 3 |
| Anemia | 3 |
| Cholelithiasis | 2 |
| Alcoholism | 2 |
| Gonorrhea | 2 |
| "Neuritis" | 2 |
| Nontoxic thyroid adenoma | 2 |
| Liver disease | 2 |
| Carcinoma | 1 |
| Bronchial asthma | 1 |
| Sinusitis | 1 |
| Salpingitis | 1 |
| Arthritis | 1 |
| Menopausal syndrome | 1 |
| Syphilis | 1 |
| Water, deprivation of | 1 |
| Epilepsy | 1 |

Nine patients in this series of cases exhibited the signs and symptoms of heart disease. Seven of the 9 had hypertensive cardiovascular disease, 1 had arteriosclerotic heart disease and 1 had severe cor pulmonale secondary to long standing bronchial asthma. The degree of intoxication in these patients varied from very mild to severe and roughly paralleled the height of the blood bromide levels. In all of the severe cases the blood level was 200 mg. per hundred cubic centimeters or higher. The efficiency of cardiac function in these patients varied from a slight disturbance to serious impairment with severe heart failure. There was no apparent relationship between the degree of heart failure and the severity of bromide intoxication. From this small series of cases it would appear therefore that, while bromide poisoning occurs rather frequently in patients who have heart disease, the heart disease does not in itself predispose such patients to bromide intoxication. It seems more likely that the presence of heart disease acts primarily as a factor in precipitating an anxiety state and that the bromides are taken or prescribed because of the latter condition.

The coexistence of heart failure and bromide poisoning presents a therapeutic problem of considerable importance, for in the treatment of one sodium chloride is withheld and in the treatment of the other the ingestion of sodium chloride is forced. No patient with heart failure who is being treated with a salt free or salt poor diet should be given bromides, and all such patients should be warned of the danger of using the various "patented" bromide containing remedies. When bromide poisoning exists in a patient with heart failure one may substitute ammonium chloride for sodium chloride, thus supplying the chloride need in

the treatment of bromism and eliminating the sodium, the element that needs be withheld in the treatment of heart failure and edema.

### TREATMENT

Fortunately the treatment of bromism is simple and effective. It consists in the administration of sodium chloride and the forcing of fluids to hasten the elimination of bromide. It is important to point out, however, that response to therapy, especially when the degree of intoxication is severe, is slow and rarely dramatic. Almost always the blood bromide level falls before there is any appreciable change in the patient's mental state. When the blood level is 250 mg. per hundred cubic centimeters or above there is usually a drop to 100 mg. per hundred cubic centimeters or less within five to seven days after the institution of adequate treatment. Improvement in mental symptoms, however, may lag far behind. This is illustrated by charts 1 and 2, in which it can be seen that, in spite of the prompt fall in blood bromide levels, nineteen days elapsed after the beginning of treatment before the patients became mentally clear.

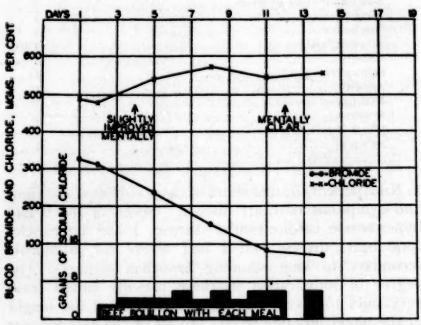


Chart 3 (T. P.).—Illustrating the steady and continuous fall in blood bromide level and clearance of mental symptoms of a patient receiving 6 to 8 Gm. of sodium chloride daily.

It is important to recognize this delay in the response of mental symptoms to treatment when the question arises, as it frequently does, as to whether the patient is suffering from an underlying major psychosis. The blood bromide level is of little aid in the evaluation of mental symptoms after treatment is begun. It becomes simply a matter of time and observation, and one is not justified in ascribing persisting mental symptoms to some condition other than bromism until at least three weeks have elapsed after the beginning of treatment. The reason for this persistence of the mental symptoms is unknown. The bromide ion exerts its pharmacologic effects through its presence in the extracellular fluids of the body, and the nervous system seems to be unusually sensitive to the substitution of bromide for chloride.[7] The ratio of bromide to chloride in the extracellular fluids of the body everywhere is the same as that in the serum, except in the brain and cerebrospinal fluid, where the ratio is lower.[8] It may be that the equilibrium between the blood and the extracellular fluids of the nervous system occurs more slowly, thus accounting for the difference in the ratio between bromide and chloride ions. If this is true, then the slow improvement of the mental symptoms as contrasted with the prompt fall in the blood bromide level may be accounted for. Equilibrium between serum and brain and cerebrospinal fluid being slowly established, the substitution of chloride for bromide in the nervous system may occur much less rapidly than it does in the serum. Thus, while bromide is rapidly eliminated from the serum, it is slowly displaced in the nervous system and continues to exert its effect there.

Six to 8 Gm. of sodium chloride daily would appear to be the optimum dosage. Larger amounts, 15 to 30 Gm., may be given with somewhat more rapid fall in the blood bromide level, but to little advantage since increasing the salt dosage does not hasten the removal of the mental symptoms and has the disadvantage of causing nausea, vomiting and diarrhea. Such manifestations of too rapid administration of sodium chloride are not only unpleasant but may actually retard recovery because much needed fluid is lost by the vomiting and diarrhea and also because the sodium chloride intake cannot be adequately controlled. In 1 case (chart 1) a paroxysm of auricular fibrillation occurred during the period of intensive salt therapy.

When 6 to 8 Gm. of sodium chloride is given daily by mouth or parenterally, if necessary, the undesirable gastrointestinal side effects are usually avoided, and, while somewhat less abrupt, the fall in blood bromide level begins promptly and is steady and continuous (chart 3). Furthermore, the improvement in mental status seems to occur just as rapidly as when larger amounts of sodium chloride are given.

### SUMMARY

Bromide poisoning has continued to be a common condition in spite of numerous clear expositions of its cause, prevention and treatment in the past fifteen years. Forty-nine additional cases have been observed.

More than 50 per cent of the cases in this series were referable to the injudicious use of bromides by practicing physicians and their failure to recognize the toxic effects, once they appeared. Other causes were the result of the uncontrolled sale of "patented" pain remedies containing bromide.

Mental symptoms due to bromide poisoning often respond much more slowly to treatment than does the level of bromide in the blood.

7. Goodman, Louis, and Gilman, Alfred: Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941, pp. 155, 165.
8. Mason, M. F.: Halide Distribution in Body Fluids in Chronic Bromide Intoxication, J. Biol. Chem. **113**: 61 (Feb.) 1936. Weir, E. G., and Hastings, A. B.: The Distribution of Bromide and Chloride in Tissues and Body Fluids, ibid. **129**: 547 (Aug.) 1939.

**Paracelsus.** — Paracelsus (1493-1541) was an original, although eccentric, figure, who is sometimes called the father of chemistry and the reformer of materia medica. He was born in Einsiedeln, near Zurich, Switzerland. He claimed to have traveled all over the world. He taught as professor of medicine in Basle and in other cities. His bombastic method of delivery, the license of his criticism of orthodox doctors, his theatrical tricks—such as publicly burning the works of Galen and Avicenna—led to his continual persecution, and he wandered from place to place in Germany, finally dying in Salzburg. Tradition says that he believed in, in fact owned, the philosopher's stone. His mind, his philosophy, looked back to the Middle Ages and forward to the Renaissance. He introduced mineral baths; he also introduced laudanum, mercury, lead, arsenic, iron, copper sulfate, tinctures and alcoholic extracts into the pharmacopeia. He discarded and ridiculed the doctrine of the four humors. His principal works are Chirugia magna (1536), De gradibus (1568), A Treatise on Diseases of Miners (1567).—Clendening, Logan: Source Book of Medical History, New York, Paul B. Hoeber, Inc., 1942.

# TOXIC REACTIONS OF SULFAGUANIDINE THERAPY

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In the course of sulfaguanidine therapy of ambulatory patients a significant number of complications were noted, which it is our purpose to report in this paper. The patients treated were 191 soldiers on a tropical isle. At the time of treatment they were either convalescent or contact carriers of Shigella paradysenteriae flexner, W type. By "convalescent carriers" is meant those whose stool cultures, following complete symptomatic recovery from the acute stage of the disease, were found to be positive for the causal organism; the term "contact carriers" is applied to persons who at no time had any acute symptoms but whose stool cultures were positive.

In addition to a fairly large group, some 20 per cent, with subjective complaints, 22 patients (11.5 per cent) in this series developed objective reactions of sufficient severity to necessitate discontinuing sulfaguanidine. No evident correlation was found to exist between previous sulfaguanidine treatment and reactions. Eight (36.4 per cent) of the 22 patients with reactions had had previous therapy, as compared with 76 (40 per cent) of the entire group of 191. These 76 had received the drug earlier, in amounts up to 100 Gm., during their acute stage of dysentery.

Various considerations necessitated the division of patients into two groups, each of which was managed by one of us. The essentials of treatment in the two groups were the same, a ten day course of sulfaguanidine 3.5 Gm. three times daily for a total contemplated dosage of 105 Gm. Patients were on a "duty" status throughout, although light duty was recommended when possible. Limited laboratory facilities made it impossible, unfortunately, to obtain determinations of sulfaguanidine levels in the blood or stools. In one group of 83 cases blood counts and urinalyses were done at two to three day intervals, more frequently where complications were noted or suspected. In the other 108 cases blood counts and urinalyses were done only when reactions occurred, but care was taken to insure a urinary excretion of at least 1,500 cc. daily. No abnormalities in the blood picture were noted in any patient. Results in the two groups were closely parallel.

Febrile reactions, with oral temperatures ranging from 100 to 103.8 F., were noted in 18 cases, 9.4 per cent of the total treated. This complication appeared on the third to the fifth day of therapy in 11 cases. In 10 of the 18 no previous sulfaguanidine therapy had been given. On withdrawal of the drug the temperature returned to normal within twenty-four hours in all instances. In order to obtain confirmation that the drug was responsible for the pyrexia, 7 patients were then given additional sulfaguanidine. All became febrile within four to eight hours. In 2 instances a third similar trial produced the same results.

Five patients developed dermatologic reactions during the course of treatment. Three of these were urticarial, 2 scarlatiniform. All 5 cleared completely within twenty-four hours of cessation of sulfaguanidine.

The most frequent finding was that of intermittent crystalluria, noted in 22 (26.5 per cent) of the 83 cases in which repeated urinalyses were done during the course of treatment. In only 3 cases was this finding associated with the febrile reaction. It was observed as early as the second day of sulfaguanidine therapy in 2 instances, on the third day in 4 others, and it persisted throughout the ten day course in 5 cases. Transient hematuria occurred in 4 instances, in 1 of which there was diminution of urinary output for a twenty-four hour period preceding the appearance of the crystals. In all other instances the crystalluria was attended by no other signs or symptoms referable to the genitourinary tract. The crystals were large and rectangular and were present in both alkaline and acid specimens.

One or more of the subjective symptoms headache, mild malaise, anorexia, occasional backache and nausea, in order of frequency, was complained of by approximately 20 per cent of the patients.

## REPORT OF CASES

CASE 1.—A soldier aged 24 received a total of 21 Gm. of sulfaguanidine in forty-eight hours, at the end of which time he had a rise in temperature to 103 F. with chills, nausea and severe headache. The drug was discontinued, and within twenty-four hours the temperature had returned to normal and the subjective complaints disappeared. Two days later, following an additional 3.5 Gm. of sulfaguanidine, the fever returned, again subsiding on cessation of the drug. The blood count and urinalysis were normal at that time.

CASE 2.—A soldier aged 25, on the eighth day of treatment, at which time he had received a total of 84 Gm., developed a temperature of 102.8 F., slight chills and severe headache. The drug was discontinued, with a subsequent prompt fall in temperature to normal. Blood count and urinalysis were normal.

CASE 3.—A soldier aged 19 had received a total of 32 Gm. while hospitalized, with no reaction. Two weeks later a course of sulfaguanidine was begun on an outpatient status, and on the fourth day of treatment, at which time 35 more grams had been given, the patient developed fever of 102 F. and complained of severe headache. The blood count and urinalysis were normal. The drug was discontinued, the temperature returned to normal, and symptoms subsided within twenty-four hours.

CASE 4.—A soldier aged 22 received a total of 96 Gm. while hospitalized, with no reaction noted. Two weeks later, after receiving 28 more grams of sulfaguanidine in a three day period, the temperature rose to 101.8 F., with complaints of severe headache, nausea and chills. On cessation of therapy all signs and symptoms returned to normal. Blood count and urinalysis were normal.

CASE 5.—A soldier aged 28 received a total of 48 Gm. during hospitalization with no reactions noted. Two weeks later, after receiving 28 Gm. within three days, the temperature rose to 102.2 F., with complaint of headache. The drug was discontinued, and fever and headache disappeared within twenty-four hours. Blood count and urinalysis were normal.

CASE 6.—A soldier aged 24, after receiving 28 Gm. of sulfaguanidine in three days, developed fever of 102.4 F., chills, headache and nausea. The drug was discontinued. Prompt fall in temperature and disappearance of subjective complaints followed within twenty-four hours. Forty-eight hours later the patient was given 7 Gm. of sulfaguanidine, with return of fever and subjective symptoms. Recovery to normal again followed withdrawal of the drug. The blood count and urinalysis were normal.

CASE 7.—A soldier aged 26, on the third day of treatment following a total of 27 Gm., developed fever of 103.2 F., severe headache, backache, nausea, anorexia and chills. The drug

was discontinued, and all symptoms and fever disappeared within twenty-four hours. Two days later 3.5 Gm. of sulfaguanidine was given; fever of 102.4 F., headache and nausea returned. Recovery again followed withdrawal of the drug. Blood count and urinalysis were normal.

CASE 8.—A soldier aged 37, after receiving a total of 35 Gm. of sulfaguanidine in four days, developed fever of 101.4 F., chills and headache, all of which cleared up within twenty-four hours when the drug was stopped. Blood count and urinalysis were normal.

CASE 9.—A soldier aged 37, on the third day of treatment, after receiving 28 Gm. of sulfaguanidine, developed a fever of 102.6 F., malaise, anorexia and nausea. The drug was discontinued, with prompt return to normal within twenty-four hours. Blood count and urinalysis were normal.

CASE 10.—A soldier aged 23 had received a total of 100 Gm. of sulfaguanidine during hospitalization with no ill effects reported. Two weeks later, following administration of 42 more grams in four days, the patient developed a fever of 101.2 F., slight headache and malaise. The fever and other complaints disappeared within twenty-four hours when the drug was discontinued. Blood count and urinalysis were normal.

CASE 11.—A soldier aged 20 had received a total of 64 Gm. during hospitalization, with no ill effects reported. Two weeks later, after an additional 63 Gm. in six days, the patient developed a generalized scarlatiniform eruption of the trunk and extremities. The patient had had no previous skin eruptions. No associated subjective symptoms were present. The rash disappeared within forty-eight hours of withdrawal of the drug and did not recur. The blood count and urinalysis were normal.

CASE 12.—A soldier aged 24, after receiving 73.5 Gm. of sulfaguanidine, on the seventh day of treatment developed a temperature of 101.6 F., chills and malaise. Return to normal followed within twenty-four hours of withdrawal of the drug. Thirty-six hours later two additional doses, 7 Gm., elicited a temperature rise to 101.4 F. The drug was again discontinued, with a prompt return to normal. Except for moderate crystalluria on two occasions, blood counts and urinalyses were normal.

CASE 13.—A soldier aged 26 developed headache and malaise on the fourth day of treatment and slight chills on the eighth day. On the tenth day, at which time he had received a total of 101.5 Gm., he experienced severe headache, malaise, anorexia and fever of 103.8 F. All symptoms subsided and temperature returned to normal in less than twenty-four hours. Blood counts and urinalyses were normal.

CASE 14.—A soldier aged 27 had received a total of 30 Gm. while hospitalized, with no toxic reaction. Seven days later drug treatment was reinstituted. On the fifth day of treatment, at which time he had received 49 Gm., he developed a temperature of 101.8 F., which subsided within twenty-four hours. A day later 7 more grams was given, with a prompt rise in temperature to 100 F. The fever again subsided on discontinuance of the drug. Blood counts and urinalyses were normal.

CASE 15.—A soldier aged 27 had received 32 Gm. of sulfaguanidine during a previous period of hospitalization, with no toxic manifestations. Two weeks later further treatment was given, and, after receiving 73.5 Gm., on the seventh day of therapy, his temperature rose to 100.4 F., with pronounced malaise. On discontinuance of the drug, fever and discomfort ceased. After two days 17.5 more grams was given, with a resultant urticaria of the eyelids, lips, hands, back and legs, which subsided within twenty-four hours.

CASE 16.—A soldier aged 20, after receiving 63 Gm. of sulfaguanidine in six days, developed fever of 101.2 F. and severe backache. Moderately decreased urinary output had been noted in the preceding twenty-four hours. Urinalysis showed occasional red blood cells and moderate crystalluria. All findings disappeared within a day following withdrawal of the drug. The blood counts were normal.

CASE 17.—A soldier aged 20 received a total of 96 Gm. during a previous period of hospitalization. At that time he had complained of malaise, anorexia and emesis on two occasions but developed no other symptoms referable to the medication. Eight days later sulfaguanidine was again started. After receiving only 10.5 Gm. he developed fever of 102.4 F. and severe malaise. Return to normal took place within eighteen hours of cessation of medication. An additional 7 grams two days later again caused a rise in temperature to 99.8 F. and a moderate urticaria of the chest and arms. Both fever and urticaria promptly subsided. A third rise in temperature to 100 F. followed administration of 7 Gm. of sulfaguanidine forty-eight hours later, with the usual return to normal after cessation of treatment. Urinalyses and blood counts were normal throughout.

CASE 18.—A soldier aged 22 developed crystalluria on the fourth day of therapy, at which time he had received 42 Gm. Moderate hematuria was noted on the seventh day of therapy, as well as persistent crystalluria. Blood counts were normal.

CASE 19.—A soldier aged 24 had received a total of 48 Gm. during previous hospitalization without toxic effects. Two weeks later he was again placed on sulfaguanidine, and, after receiving 84 Gm., on the eighth day of treatment developed an urticaria of the wrists and forehead, which disappeared on discontinuance of the drug. Blood counts and urinalyses were normal.

CASE 20.—A soldier aged 32 complained of severe headache, malaise and anorexia from the second day of therapy. In addition, crystalluria was noted at that time. All these findings persisted throughout the course of therapy, which was terminated on the ninth day because of a rise in temperature to 100 F. All complaints then disappeared promptly.

CASE 21.—A soldier aged 21 developed crystalluria on the eighth day of treatment, at which time he had received 77 Gm. The following day the presence of red blood cells in the urine in addition to the crystals necessitated cessation of therapy. The condition disappeared in forty-eight hours. The blood counts were normal throughout.

CASE 22.—A soldier aged 29 developed a scarlatiniform eruption of the trunk and extremities, crystalluria, moderate hematuria and temperature of 101.4 F. on the tenth day of treatment, at which time he had received a total of 98 Gm. of sulfaguanidine. The rash, fever and crystalluria disappeared within twenty-four hours; the hematuria persisted an additional day.

## SUMMARY

1. Sulfaguanidine was given to 191 ambulatory carriers of bacillary dysentery in evident good health. Twenty-two (11.5 per cent) developed complications of sufficient severity to necessitate discontinuing the drug.

2. Febrile reactions occurred in 18 patients (9.4 per cent), dermatologic reactions in 5 (2.6 per cent) and hematuria in 4 (2.1 per cent).

3. Crystalluria was noted in 22 (26.5 per cent) of 83 cases in which repeated urinalyses were done. This finding, when it existed without concomitant complications, was not considered sufficient indication for discontinuing the drug.

4. The factor of increased fluid loss due to perspiration in the soldiers receiving the drug, as they were on a duty status in a tropical climate, is felt to be at least a contributing condition in development of reactions of the severity and frequency reported herein.

5. From these observations, it is evident that sulfaguanidine therapy is not without its dangers, and the same caution in administration should be exercised as with the other sulfonamides.

# DIAGNOSIS OF LIVER ABSCESS BY MEANS OF THOROTRAST HEPATOSPLENOGRAPHY

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From now on we must expect a great increase of amebiasis in the United States as our soldiers and sailors return home from the various theaters of war. We must be alert to the possibility of this disease not only in cases of diarrhea but in cases of vague abdominal complaint and fever not readily explained, since many of our boys may be victims of chronic amebiasis or may act as carriers. Cognizance must be taken also of the fact that amebic liver abscess may not develop until years after the primary intestinal infection has become asymptomatic, as illustrated by some of my cases.

The diagnosis of liver abscess, either amebic or pyogenic, is often difficult. It should be suspected in every case of discomfort in the right upper quadrant of the abdomen with fever, either with or without enlargement of the liver. In some cases there may be fever and enlargement of the liver without pain. In many cases there is little or no jaundice. Chills are more common in the pyogenic form. The presence of a rounded protuberance of the liver is more frequent with the amebic form, but this manifestation may not be evident on physical examination, since the swelling may be above the costal margin.

There is no better way of making the diagnosis of either form of liver abscess than Thorotrast hepatosplenography, a procedure which I have employed for nearly thirteen years in several hundreds of cases. A follow-up study [1] of 286 patients so examined over the first ten year period of my use of this procedure revealed no evidence of harmful effects from the presence of thorium dioxide in the tissues in the amounts used. It was noted that liver abscess was one of the conditions in which the method was most valuable as a diagnostic procedure.

Thorotrast hepatosplenography was developed both by Oka and by Radt in 1929 and makes use of roentgenographic examination of the liver and spleen following the intravenous administration of a stabilized colloidal solution of thorium dioxide.[2]

When this material is introduced into the blood stream it is rapidly removed and engulfed by the cells of the reticuloendothelial system. Since the liver and spleen contain these cells in greatest concentration, these organs will receive the greatest amount of Thorotrast. By virtue of its high molecular weight, thorium dioxide is radiopaque and thus serves as a contrast medium. In a Thorotrast hepatosplenogram normal liver tissue appears of a homogeneous density about equal to that of the vertebrae, the spleen about the same density as the ribs. Since a liver abscess is a circumscribed area of pus containing necrotic hepatic tissue and is devoid of active reticuloendothelial cells, it will contain none of the Thorotrast and will be of lesser density than surrounding normal liver tissue on the x-ray film. In this manner liver abscess, especially the solitary amebic variety, is easily demonstrated and precisely located. The only lesions that need be differentiated are neoplasm and cyst. Metastatic carcinoma appears as areas of lesser opacity with clearcut margins and often with a halo of condensed liver tissue. Solitary tumors are rare but present roentgenographic features similar to those of metastatic growths. The same is true of echinococcic and other rare cysts. The outline of a solitary liver abscess may or may not be rather sharp but in any case does not have a halo of increased density. Multiple pyemic abscesses are smaller and present a fuzzy outline that blends with the adjacent liver parenchyma.

The method now employed is to inject slowly intravenously 75 cc. of Thorotrast (adult dose) and to make the x-ray exposures several hours later. Studies of the rate of deposition of Thorotrast [3] have shown that most of it is removed from the blood stream during the first fifteen minutes following injection and that after two hours the films made are as good as at any time thereafter.

In making the injection it is important to avoid infiltration of the subcutaneous tissue, since Thorotrast remains there and in time produces unsightly hard nodules which may become painful and require excision. These foreign body tumors do not become malignant in man.[4] To simplify injection the Thorotrast may be diluted with several hundred cubic centimeters of isotonic solution of sodium chloride and be given by the gravity method. In this way one can ascertain that the needle is entirely within the vein before the Thorotrast is added to the flask. Mild reactions are not uncommon when the whole 75 cc. is injected at one time. They are so unimportant, however, that the old method of injecting 25 cc. on each of three successive days was abandoned in order to save time. Good films are usually obtainable with the patient placed in the prone position by means of the following technic: 300 milliamperes, kilovolt peak 58, distance 40 inches, time ¼ to ½ second, depending on the size of the patient.

Five cases of probable amebic liver abscess and 2 cases of pyogenic abscesses will be described briefly. Four of the solitary abscesses have been reported previously,[5] and these will be reviewed in less detail.

## AMEBIC LIVER ABSCESS

CASE 1.—A white man aged 38 entered Georgetown University Hospital on July 24, 1936 stating that he had had severe pain in the right upper quadrant of the abdomen intermittently and that for six weeks he had had fever. The pain was sharp and stabbing in the hepatic area, and there was a dull constant ache in the right posterior lumbar region. Intermittent vomiting had occurred, and a loss of 40 pounds (18 Kg.) had resulted. There had been a chill the day before admission. Bowel function had not been abnormal. The patient appeared seriously ill but was not jaundiced. The temperature was 101 F. and the pulse rate 100. There was hepatomegaly with pronounced tenderness over the right lobe, the edge of which was rounded and extended 6 cm. below the right costal margin. A definite hypochromic anemia with a high granulocytic leukocytosis was found. Repeated stool examinations were normal. A moderately severe, irregular fever persisted, ranging from 98 to 103 F. Troublesome bronchitis developed. A hepatosplenogram revealed an area of decreased density in the lower portion of the right lobe of the liver indicating the presence of an abscess. Drainage of thick, reddish brown pus was instituted, and the patient was

From the Department of Medicine, Georgetown University School of Medicine.

1. Yater, W. M., and Coe, F. O.: Ten Years' Experience with Thorotrast Hepatosplenography, Ann. Int. Med. **18**: 350-366, 1943.
2. Manufactured by the Heyden Chemical Corporation of New York under the name Thorotrast.
3. Yater, W. M.: Rate of Deposition of Thorotrast in the Human Liver and Spleen, Am. J. Roentgenol. **38**: 447-449, 1937.
4. Yater, W. M., and Whitmore, E. R.: Histopathologic Study of Tissues of 65 Patients Injected with Thorium Dioxide Sol for Hepatosplenography, Am. J. M. Sc. **195**: 198-205, 1938.
5. Meredith, R. H.; Cooper, L. F., and Yater, W. M.: Thorotrast Hepatosplenography as a Diagnostic Aid in Solitary Liver Abscess: Report of Four Cases, M. Ann. District of Columbia **11**: 382-387, 1942.

discharged as cured on the fortieth day after operation. Although amebas could not be found, a course of emetine hydrochloride was given.

CASE 2.—A white man aged 36, who entered Georgetown University Hospital on Feb. 22, 1938, had been ill for nine weeks with nausea, vomiting, diarrhea and fever. He was seriously ill, emaciated and cachectic but not jaundiced. The right lobe of the liver seemed to be considerably enlarged, and there was dulness posteriorly above the right diaphragmatic area. The leukocyte count was normal, but there was severe anemia. Repeated stool examinations were negative. A moderate, irregular fever continued, with remissions of several days at a time. The diarrhea was replaced by constipation with abdominal distention. The first hepatosplenogram was unsatisfactory but showed the liver to be greatly enlarged. Aspiration of the liver was productive of 100 cc. of brownish fluid. An additional 25 cc. of Thorotrast (making a total of 100 cc.) was injected, and the hepatosplenogram revealed a large area of decreased density involving the upper two thirds of the liver. The next day paracentesis of this area resulted in the withdrawal of 1,750 cc. of purulent fluid, which at first was dark brown with clumps of necrotic débris and later was light yellow and thick. Two days later the liver was exposed surgically and 3 liters of pus was evacuated through an aspirator. Four days later 1,200 cc. of purulent fluid was aspirated from the right pleural cavity, and cultures revealed Staphylococcus aureus. The same day the patient died. Amebas had not been found, but the case was probably one of amebiasis with complicating staphylococcic empyema.

CASE 3.—A white man aged 41, who had resided in the Philippines from 1925 to 1931 and during that time had had an illness of several weeks' duration characterized by fever and diarrhea, three months before admission to Georgetown University Hospital on Oct. 23, 1941 had developed an intermittent dull, aching pain in the right upper quadrant of the abdomen and in the lower half of the right side of the chest, associated with a low grade afternoon fever, anorexia and a loss of 67 pounds (30 Kg.). The bowels were constipated. He was greatly debilitated on admission, and his temperature was 102 F. and his pulse rate 90 per minute. The base of the right lung was dull to percussion and the breath sounds were absent.

Fig. 1 (case 3).—Large amebic abscess in middle of right lobe of liver before operation.

It appeared that the right hemidiaphragm was elevated. The liver was not palpable. There was moderately severe anemia, and the leukocytes numbered 13,500, with 87 per cent neutrophilic granulocytes. Repeated stool examinations were negative. The temperature continued to be elevated with afternoon rises to 101 to 102 F. Hepatosplenograms made on November 12 revealed an area of decreased density, 15 cm. in diameter, occupying the middle of the liver (fig. 1) which, together with the clinical findings, definitely established the diagnosis of solitary liver abscess. The abscess was drained, and a course of emetine hydrochloride was given, followed by a course of chiniofon. On the fourth day postoperative transient diarrrhea developed, and Endamoeba histolytica was demonstrated in the stools. The "anchovy sauce" pus from the hepatic abscess

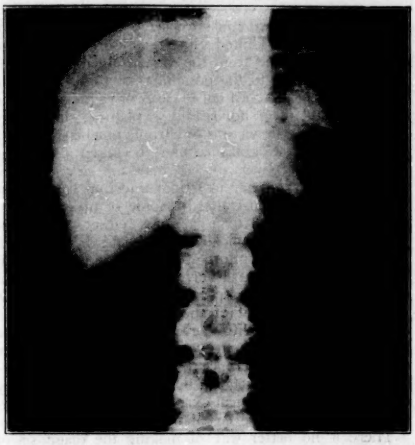

Fig. 2 (case 4).—Large abscess in upper half of right lobe before rupture into right lung.

did not show amebas, as is usual. Steady improvement followed the second stage of the operation, and the patient was discharged on December 13 as cured.

CASE 4.—Three months before admission to Georgetown University Hospital on Feb. 26, 1942 a white man aged 47, residing in Florida, had had an illness characterized by chills, fever, sweating and diarrhea. He was treated with sulfathiazole, and after ten days his temperature became normal and the diarrhea subsided for two weeks but then recurred. A weight loss of 30 pounds (13.6 Kg.) resulted. There was no abdominal pain or jaundice. Findings on admission included the presence of a large, hard, immovable mass about 5 cm. in diameter on the posterior wall of the left hemithorax in the region of the seventh rib, evidence of elevation of the right hemidiaphragm with limited motion, and some tenderness of the edge of the liver, which was palpable 2 cm. below the right costal margin. There was moderate anemia and a leukocytosis of 19,200 with 73 per cent neutrophilic granulocytes. Repeated stool examinations were negative. A remittent fever ranging up to 103 F. persisted. Hepatosplenograms showed a slightly enlarged liver with elevation of the right hemidiaphragm, and a large area of decreased density in the upper half of the right lobe of the liver of rounded contour (fig. 2). The swelling of the left hemithorax was shown to be an osteochondroma. Signs of fluid in the right pleural cavity appeared, and during the night preceding planned operation for liver abscess the patient began to expectorate a large amount of thick, brick red, foul smelling fluid resembling anchovy sauce (fig. 3). Operation was canceled, but aspiration of 400 cc. of similar pus was aspirated from the liver through a cannula. Amebas were not found in the pus. After a week of coughing the temperature became normal and improvement rapid. The patient was discharged as cured on March 26, During hospitalization he received a course of emetine hydrochloride followed by a course of chiniofon.

CASE 5.—J. H. R., a white man aged 30, entered Gallinger Municipal Hospital on Sept. 8, 1943 after two weeks of unproductive cough and morning vomiting and three days of soreness and pain in the right upper quadrant of the abdomen. He

had observed a swelling the size of a plum beneath the right costal margin. This swelling was noted on admission to the surgical service, but on the second hospital day both swelling and pain disappeared. Bowel function and temperature were normal. He remained in the surgical service for two weeks. Roentgenographic examinations of the chest, gallbladder and gastrointestinal tract were normal. Four days after discharge the pain and swelling recurred, and after a week of suffering he was readmitted, this time to the medical service. The patient had been raised in the mountains of West Virginia. The only illnesses he remembered were an attack of "intestinal flu" at 12 and mumps at 15.

The patient was poorly nourished and pale, with scattered, coarse bronchial rales and a tender mass the size of a lemon just below the right costal margin. There was some muscle spasm and warmth and erythema overlying the mass. A fever ranging between 100 and 101 F. was present, and the leukocyte count was 16,200, with a normal differential count. A flat x-ray film of the abdomen, films of the spine and pyelograms were normal. A hepatosplenogram showed a rounded opacity measuring 5 by 10 cm. in the lower portion of the right lobe of the liver (fig. 4), which was interpreted as a solitary liver

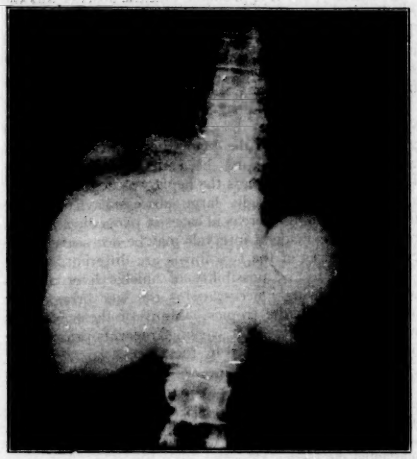

Fig. 3 (case 4).—Hepatosplenogram made the day after rupture of abscess into right lung.

abscess. On the same day both cystic and motile forms of Endamoeba histolytica were found in the stools.

Because the pain and tenderness were becoming rapidly more severe and because the hepatosplenogram showed a very thin rim of liver tissue under the lower margin of the defect in the liver shadow, it was felt that there was grave danger of rupture of the abscess into the peritoneal cavity. Consequently, immediate aspiration was performed through the chest wall below the pleura reflection with the needle pointing downward, and 50 cc. of purplish red, necrotic, odorless pus was easily aspirated. Three grains (0.2 Gm.) of emetine hydrochloride was instilled into the abscess cavity and along the track of the needle. The following day surgical drainage was performed through the same approach. On the same day Dr. John Bozicevich of the National Institute of Health reported that amebic complement fixation tests of the blood were the most strongly positive in his experience.

A course of emetine hydrochloride was followed after a week's rest by a course of carbarsone, which after another week's rest was followed by a course of vioform. The blood complement fixation tests gradually became negative. Recheck hepatosplenograms showed progressive decrease in the size of the abscess cavity with almost complete obliteration on the thirty-third postoperative day (fig. 5), when the drainage tube was removed. At the time of discharge on Oct. 21, 1943 the patient had gained 15 pounds (6.8 Kg.) and stated that he had never felt better in his life. At no time during his illness had there been significant disturbance of bowel function.

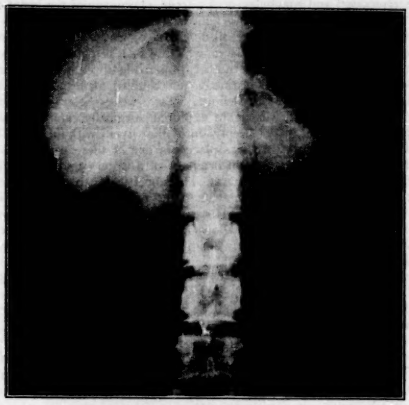

Fig. 4 (case 5).—Amebic abscess in lower portion of right lobe of liver before drainage.

PYOGENIC LIVER ABSCESSES

CASE 6.—H. B., a white man aged 24, had pain in the region of the right costal margin for five weeks before admission to the hospital on Dec. 16, 1942 accompanied by night sweats and a series of three chills. The pain was increased by respiration. Vomiting had occurred twice. The patient had had

Fig. 5 (case 5).—Hepatosplenogram one month after insertion of drainage tube in abscess, which has filled in, leaving evidence only of track of drainage tube.

chronic bronchitis since childhood. Physical examination showed nothing of significance except a suggestion of enlargement of the right lobe of the liver. The temperature ranged irregularly between normal and 103.8 F., with the pulse rate elevated proportionately. A rigor occurred every few days. Roentgenograms of the chest were negative. The white blood cell count was 30,300, with 86 per cent segmented neutrophils, 3 per cent

band forms and 1 juvenile leukocyte. About three weeks after admission surgical exploration of the liver revealed a firm raised area on the margin of the moderately enlarged right lobe covered by a few filmy adhesions. Aspiration was unproductive, but a biopsy revealed necrotic liver tissue infiltrated with polymorphonuclear leukocytes. A culture showed nonhemolytic streptococci and Staphylococcus aureus. Drainage of the hepatic lesion was fruitless and no improvement resulted. A hepatosplenogram showed a large, ill defined area in the upper portion of the right lobe of the liver which was less dense than the remainder of the liver. Another film made three weeks later showed this area more distinctly, and a third made two weeks later on was still more definite. Two weeks after the first operation the liver was again explored surgically, and several punctures were made deeply into the liver without result. However, a rubber tube was placed in one of these deep holes. From this there was a slight drainage of a watery material, and the patient seemed to improve. His appetite became good, the temperature elevation was not so great, and the white blood cell count dropped to 17,300. Three and a half weeks after the operation the patient was allowed to return home, no further chills having occurred. His condition at home remained much as it had been in the hospital, but in the early part of March chills recurred and a more toxic state set in. On March 13 the patient was brought back to the hospital, and the next day he suddenly coughed and became very dyspneic, cyanotic and apprehensive. An hour later he died.

Necropsy revealed the right lobe of the liver to be greatly enlarged and adherent anteriorly to the abdominal wall with fibrinous adhesions. In its center was a large abscess about 10 cm. in diameter filled with thick pus. A capsule was apparently forming. It appeared that one of the exploring punctures had barely missed entering the abscess. There was a right fibrinous pleuritis with an early abscess in the right lower lobe just above the diaphragm. The appendix was swollen and covered by a purulent exudate. The spleen was large and soft. Sections of the liver showed a necrotic abscess wall containing polymorphonuclear leukocytes, monocytes and fibrin. The wall of the appendix was edematous and engorged, and it contained many lymphocytes.

CASE 7.—W. R. F., a white man aged 21, entered Georgetown University Hospital on April 6, 1943 stating that since the previous morning he had had a severe, continuous pain in the region of the umbilicus. Anorexia, nausea and vomiting followed soon after. One large bowel movement had been succeeded by three loose ones containing neither mucus nor blood. The past history was irrelevant. There was abdominal tenderness but no rigidity, and rectal examination revealed tenderness on the right side at the tip of the finger. The temperature was of septic type with large remissions, from 101 to 107 F., with the pulse rate varying correspondingly. On April 9 administration of sulfadiazine was begun; two courses were given. On April 11 the blood culture was reported positive for a hemolytic streptococcus and on April 16 for an anaerobic streptococcus.

During the first week the patient complained only of a headache; the abdominal pain disappeared and was replaced by some soreness only. Symptoms of a severe bronchitis existed for a while. On April 11 jaundice of moderate degree appeared. Between April 16 and May 4 chills and sweats occurred daily. Nausea and vomiting were always troublesome. The spleen became palpable and gradually enlarged until it reached to the umbilicus. In May the liver became palpable but was never greatly enlarged. On May 9 ascites was noted and persisted. Occasional bouts of diarrhea were reported.

A hepatosplenogram made on April 26 showed nothing abnormal. However, because the history and clinical features were suggestive of suppurative pylephlebitis with liver abscesses a film was made almost weekly. One on May 11 revealed an area 5 by 7 cm. in the middle of the right lobe of the liver suggestive of an abscess. Another on May 27 showed several areas in the right lobe of the moderately enlarged liver very suggestive of multiple abscesses.

On May 21 a course of penicillin therapy was started and a total of 150,000 units given without appreciable change.

On May 28 laparotomy was performed, and an abscess was located on the under surface of the liver from which thin pus was aspirated. Although a drainage tube was inserted, this did not result in any improvement or drainage of any appreciable amount. On June 14 another hepatosplenogram still showed evidence of a group of abscesses in the liver.

The patient's course continued downhill, with various complications. He was sent home on July 1 and died there about a month later.

### COMMENT

In only 2 of the first 5 cases were amebas demonstrated. However, there was no reasonable doubt that the other 3 cases were examples of amebic abscess, since the type of pus and the clinical features were consistent. It is well known that amebas cannot be recovered from the pus unless it is scraped from the wall of the abscess cavity, a procedure that from a practical standpoint is unnecessary.

Case 6 was one of pyogenic liver abscess that appeared to be solitary, but it is probable that the abscess was the result of coalescence of a number of smaller abscesses. The origin was apparently appendicitis that was unrecognized clinically. Case 7 was probably one of suppurative pylephlebitis with multiple liver abscesses from acute appendicitis that was not recognized.

This series of cases demonstrates the value of hepatosplenography in the diagnosis of both amebic and pyogenic abscesses of the liver, the former in cases in which amebiasis had not been diagnosed previously. In cases of amebic abscess the hepatosplenogram usually shows a definite, single, large abscess cavity on the first examination, whereas in cases of pyogenic abscesses repeated films made at intervals may be necessary. The clinical features of the two forms are different.

Alertness to the possibility of amebic liver abscess will be increasingly necessary as the war brings back many men from the tropics. Many of these veterans will appear to be well for varying intervals prior to the onset of symptoms caused by the abscess.

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**Progress in Science During the Eighteenth Century.**—Equally original with the philosophers were the scientists of this period. Indeed, astronomy, mathematics, physics, chemistry, botany and physiology were enriched by a number of substantial discoveries. Newton, whose law of gravitation was expressed in a simple mathematical formula, stood supreme at the beginning of the century. His contemporary the German philosopher-mathematician Gottfried Wilhelm von Leibnitz (1646-1716) evolved differential calculus. Famous also were the astronomer-mathematician Pierre-Simon Laplace (1749-1827), one of the first to study capillary action, Leonhard Euler (1707-1783) and Joseph-Louis Lagrange (1737-1813). The German astronomer-physicist Daniel Fabriel Fahrenheit (1686-1736) prepared a number of meteorological instruments and the thermometer bearing his name. A centigrade thermometer was described by the Swede Anders Celsius (1701-1744) before the Swedish Academy in 1742. Thermodynamics was greatly improved by the epochal contributions of James Watt (1736-1819), who invented the modern condensing steam engine (1769), which was a marked improvement over the clumsy apparatus of Thomas Newcomen (1663-1729). Botany obtained the status of a science by the contributions of the Swedish physician Carl von Linne (1707-1778), who based his classification of plants on characteristics of stamens and pistils. This system was expanded by Michael Adamson (1727-1806) and by Antoine-Laurent de Jussieu (1748-1836). George-Louis Clerc de Buffon (1707-1788) contributed a vast compilation on natural history in a popular and intelligent manner, which at the time of its appearance produced a tremendous sensation. —Ricci, James C.: The Genealogy of Gynaecology, Philadelphia, Blakiston Company, 1943.

# RED BLOOD CELL PASTE IN TREATMENT OF ULCERS

## AND CHRONICALLY INFECTED WOUNDS

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It has been one of the functions of the Blood and Plasma Bank of the Naval Hospital, Philadelphia, to utilize the red blood cells which are an important by-product of plasma production and which were formerly discarded. These cells have been administered with uniform success, as red cell infusions, to 663 patients suffering from anemia. A report of our results previously has appeared in the literature.[1]

Moorhead and Unger [2] successfully used red blood cells, which were allowed to age for approximately twenty days, as a local agent in the treatment of such wounds as an open joint and an old infected burn. They suggested that this mode of therapy be given a more extensive clinical trial for better evaluation.

We applied fresh human red blood cells to a decubitus ulcer of long standing, but the problem of making these cells adhere to the wound presented itself. A sterile paste composed of concentrated red blood cells, tragacanth and hexylresorcinol was formulated. Because of the difficulty of maintaining adequate control measures in the application of this paste to open wounds, it was first decided to treat indolent ulcers which had failed to heal under the usual methods of treatment. Many of these ulcers rapidly healed. Other types of wounds—burns, deep granulating areas and the like—were thus treated. The most gratifying results were obtained in the type of lesion which fails to maintain the usual process of repair because of circulatory disorder. When the paste was applied to a dry, superficial wound it formed an impervious coating which finally became adherent to the wound, but when applied in larger quantities to deeper granulating wounds it appeared to be absorbed to some degree by the involved tissues.

### PREPARATION OF THE RED CELL PASTE

The red blood cells which remain after the plasma has been aspirated (by means of a closed aseptic technic) are used for the preparation of the red blood cell paste. After the plasma is removed, the aspirating needle is plunged to the bottom of the red blood cell pack and 250 cc. of fresh type O cells are drawn over by means of a vacuum into a sterile 300 cc. dispensing bottle.

Seventy-five cc. of 1:1,000 hexylresorcinol solution is placed in a sterile pyrex glass beaker. Powdered tragacanth (2.5 Gm.) is dusted on the surface, a sterile covering applied and the mixture kept in the beaker for several hours, until a gelatinous mass forms. This is sterilized by heating in a water bath for twenty minutes at 100 C. On cooling it is removed from the beaker with a sterile spatula and 25 Gm. introduced into the 300 cc. bottle containing 250 cc. of the sterile red cell concentrate. After thorough mixing by agitation, the paste is stored at from 2 to 5 C. while not being used. An analysis of the composition of the paste reveals 8 to 10 million erythrocytes and 2 to 3 thousand leukocytes per cubic millimeter. The hemoglobin content varies from 28 to 31 Gm. per hundred cubic centimeters.

### METHOD OF APPLICATION

The wound is cleansed with isotonic solution of sodium chloride and dry gauze. The paste is then applied with sterile cotton applicators. Superficial wounds and burns are treated by applying a thin film of paste over the area, which is allowed to dry before being covered with a sterile dry dressing. If infection develops, the crust is removed, the wound cleansed lightly with isotonic solution of sodium chloride and a second application of the paste applied. A sterile scab soon develops, under which epithelization takes place. In deep granulating wounds the paste is applied freely and in relatively large quantities, after which the wound is covered with a sterile dry dressing. When the wound is redressed, it is noted that a rather large quantity of the paste is absorbed by the affected tissues. The discharge decreases and the granulations take on

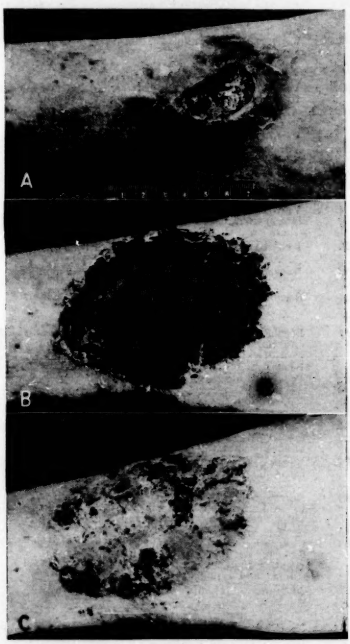


Fig. 1.—Varicose ulcer, right leg, two years' duration: *A*, Dec. 20, 1943, before treatment. *B*, Feb. 1, 1944, after forty-five applications of red blood cell paste. The ulcerated area has been filled in with granulation tissue, and epithelization has taken place beneath the crust. *C*, February 7, one week later; crust removed. Note that the ulcer has healed. There are several small areas where crust is adherent.

William R. Zeglin, Ph.M. 1/c formulated the matrix used in incorporating red cells into a paste.

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a healthy appearance. After the granulations grow to the surface of the wound, a crust forms beneath which epithelium extends. The wounds are dressed either once or twice daily, depending on their condition and progress.

methods of treatment. The Kahn test was found to be negative in all of them.

In the 10 cases of varicose ulcers treated by this method, only 1 failed to heal. The duration of these ulcers was from six weeks to three years, and they

*Results of Treatment of Open Wounds with Red Blood Cell Paste*

| Case | Type of Lesion | Duration | Previous Treatment | No. of Applications | Results |
|---|---|---|---|---|---|
| P. A. | Varicose ulcer, right leg, medial surface, 4.75 × 3 cm. | 10 months (recurrent 16 years) | Hospitalization with bed rest; various ointments; Unna boots; venous ligation below knee | 12 | Excellent; complete epithelization in two weeks |
| B. O. | Varicose ulcer, right leg, medial surface, 2 × 3 cm. | 3 years | Hospitalization; sulfathiazole ointment (produced generalized maculopapular rash) | 21 | Excellent; complete healing in four weeks |
| I. V. | Varicose ulcer, right leg, lower anterior tibial region, 4 × 2.5 cm. | 6 weeks | Antiseptic ointments; bed rest | 11 | Excellent; complete healing in twenty-six days |
| G. N. | Varicose ulcer, left leg, lower anterior tibial region, 4 × 2.5 cm. | 3 months | High saphenous ligation; bed rest; antiseptic ointments | 20 | Very good; epithelization under crust in six weeks |
| R. B. | Varicose ulcers, multiple, both legs | 3 years | Hospitalization; sulfathiazole ointment; Unna boots; multiple injections of sclerosing agents high venous ligation | 21 | Very good; complete healing; discharged six weeks after onset of treatment |
| R. D. | Varicose ulcer, left leg, posterior to internal malleolus, 2.5 × 2 cm. | 5 months (recurrent 2 years) | Hospitalization; bed rest; antiseptic ointments | 27 | Very good; complete healing in six weeks |
| R. S. | Varicose ulcer, left leg, inferior to external malleolus, 2 × 2.25 cm. | 7 weeks | Sulfathiazole powder (produced generalized dermatitis) | 30 | Very good; complete healing in seven weeks |
| G. L. | Varicose ulcer, right leg, lower medial surface, 3.5 × 2.5 cm. | 2 years | Hospitalization; bed rest; various ointments; multiple injections of sclerosing agents | 45 | Very good; complete healing in two months (fig. 1) |
| M. S. | Varicose ulcer, left leg, lower medial surface, 3 × 2.5 cm. | 6 weeks | Gentian violet solution | 35 | Fair; complete healing in ten weeks |
| T. M. | Varicose ulcer, left leg, lower lateral surface, 3 × 1.5 cm. | 4 months (recurrent 11 years) | Ointments; multiple injections of sclerosing solutions | 17 | Poor; failed to respond to treatment |
| J. B. | Ischemic ulcers (3), left leg | 1 year | Hospitalization; bed rest; various ointments | 40 | Very good; patient discharged in eight weeks |
| H. H. | Ischemic ulcers (2), left leg | 2 months | Bed rest; vitamin D ointment | 5 | Excellent; completely healed in two weeks |
| A. S. | Decubitus ulcer, sacral area | 3 months | Antiseptics; sulfathiazole ointment; heat applications | 28 | Very good; definite progressive improvement (patient died of pulmonary embolus) |
| J. B. | Decubitus ulcer, sacral area, 8 × 6.75 cm. (secondary to transsection of cord with complete paraplegia) | 8 months | Elimination of pressure in this region; sulfathiazole ointment; cod liver oil ointment; heat applications | 140 | Very good; completely healed (fig. 2) |
| S. P. | Decubitus ulcers, both buttocks, multiple, extensive (secondary to transsection of cord with complete paraplegia) | 1 year | Hospitalization; heat; elimination of pressure; routine treatment | 44 | Poor; did not respond to treatment |
| W. K. | Aseptic necrosis, distal phalanx, first digit, right foot (thromboangiitis obliterans) | 10 months | Bilateral sympathectomy; curettement of necrotic area | 3 | Excellent; wound healed in eighteen days (fig. 3) |
| J. S. | Burns, old, 2d and 3d degree, infected, both forearms and hands | 4 weeks | Petrolatum gauze; sulfanilamide powder; wet dressings of 0.25 per cent acetic acid | 20 | Excellent; complete epithelization in three weeks |
| A. H. | Burns, old, 2d and 3d degree, infected, right anterior and posterior chest | 4 weeks | Petrolatum gauze; sulfanilamide powder; normal saline compresses; split thickness skin grafts, some of which sloughed off | 28 | Good; progressive improvement |
| G. W. | Ulcer, extensive, of penis, 2.5 × 0.25 cm.; dark field negative, Frei negative, biopsy negative for carcinoma and syphilis | 3 weeks | Bland antiseptics ..... | 4 | Excellent; complete healing in ten days |
| G. C. | Amputation stump, left midthigh | 6 weeks | Azochloramide dressings ..... | 25 | Good; wound filled in with granulation tissue; epithelization took place with exception of small area, where small split thickness graft was applied |
| C. H. | Ulceration, right foot, following frostbite gangrene | 2 weeks | Sterile dry dressings; petrolatum gauze | 7 | Good; healed under crust |
| J. S. | Extensive crush wound, right shoulder | 2 months | Petrolatum gauze; primary skin graft; sulfathiazole ointment | 75 | Very good; completely healed (fig. 5) |
| L. P. | Open granulating wound | 6 weeks | Alcohol dressings; sulfathiazole powder | 10 | Excellent; complete healing in three weeks |
| C. P. | Extensive granulating wound, tibial surface, right leg, 12.5 × 7.5 cm. | 4 weeks | Antiseptic dressings; split thickness graft which sloughed off | 15 | Very good; complete epithelization |

## RESULTS OF TREATMENT

During the past fourteen months, 66 patients have been beneficially treated with human red blood cell paste and dried red blood cells. Four cases did not respond to this treatment.

The accompanying table shows the data obtained from a careful study of 24 patients treated by this method, with various lesions, such as indolent ulcers, old infected burns and extensive granulating wounds which have failed to respond favorably to the usual

varied in size from 2 by 1 cm. to 4.75 by 3 cm. Pain was quickly relieved, many patients obtaining relief after the second application of the paste. Dried red blood cells were used in other cases not included in this series, but the relief of pain was not constant. Some patients complained of a burning sensation after the lyophilized cells were applied. The inflammatory reaction which usually surrounds the varicose ulcer gradually disappeared, the granulations at the base became brighter and more healthy in appearance, and

the discharge rapidly subsided (fig. 1). Epithelization took place under a crust. When a discharge accumulated beneath the crust, the portion of the crust over this area was removed, the wound cleansed with sterile isotonic solution of sodium chloride and the paste reapplied. A thin, watery discharge may frequently appear and must be differentiated from the thick purulent discharge which, of course, is evidence of pyogenic infection.

It must be emphasized that this method is only a means to promote local healing, and other procedures, such as venous ligation and injection of sclerosing agents, should be performed when indicated.

Two cases of refractory ischemic ulcers healed under this form of treatment.

G. B. had three ulcers of the left leg which necessitated his discharge from the service. He had been hospitalized for this condition, and all the usual forms of therapy had been

Fig. 2.—Decubitus ulcer over sacral area in case of complete paraplegia: *A*, Sept. 22, 1943, before application of red cell paste (note depth). *B*, Jan. 18, 1944, after 118 applications. Area has been filled in with granulation tissues and epithelization taking place. *C*, April 5, area completely healed after 140 applications.

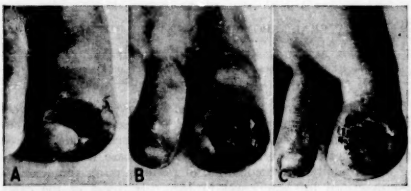


Fig. 3.—Cavity produced by curettement of necrotic area in case of thromboangiitis obliterans: *A*, Nov. 18, 1943, before application of red blood cell paste. *B*, November 21, after third (last) application. *C*, December 7, twenty days after onset of treatment. Granulation tissue has filled in cavity, and epithelization has taken place in area surrounding nail bed.

applied with unsatisfactory results. These ulcers, of one year's duration, healed after forty applications of red blood cell paste, and the patient was discharged eight weeks after onset of treatment.

The paste was applied in 3 cases of decubitus ulcers which had shown no sign of progress with other methods of therapy.

J. B. had a large decubitus ulcer of eight months' duration over the sacral area, secondary to a transsection of the cord caused by a gunshot wound. This type of ulcer is notoriously difficult to heal and in many cases incurable. He had previously been treated with heat, cod liver oil and sulfathiazole ointments, but progress in the healing of the lesion had not occurred. After 140 daily local applications of this paste the wound showed slow but progressive improvement, and at the present time the area is completely healed (fig. 2).

Another patient, S. P., with complete paraplegia (eighteen years' duration) and multiple extensive decubitus ulcers has failed to show any improvement with this method or any other mode of therapy.

In a case of thromboangiitis obliterans the paste was applied to a cavity which had been produced by the curettement of a necrotic area of the distal phalanx,

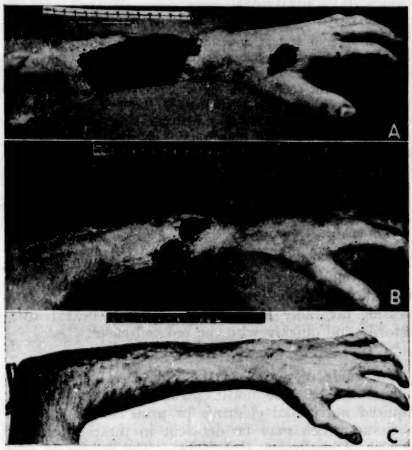


Fig. 4.—Second and third degree burns of forearm and hand: *A*, Oct. 30, 1943, after third application of red cell paste (note crust which has formed). *B*, November 12, after fifteenth application of paste (epithelization is taking place beneath crust. *C*, after twenty-five days from onset of treatment. The wound is completely healed.

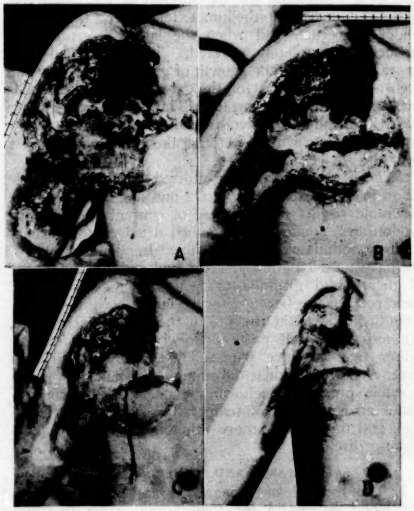


Fig. 5.—Crush wound of right shoulder: *A*, before application of red blood cell paste. *B*, Oct. 14, 1943, after seven applications. *C*, October 19, after twelve applications. *D*, after seventy-five applications (wound completely healed).

first digit, right foot (fig. 3). This patient complained of severe pain which was relieved after the first application. The red blood cell paste apparently acted as

a coagulum in which granulation tissue formed. Epithelization took place under a fine crust formed by the red cell paste. This area showed complete healing in eighteen days.

Two cases of old infected burns have been treated.

J. S. suffered second and third degree burns of both forearms and hands which were treated for four weeks with petrolatum gauze, sulfanilamide powder and wet applications of 0.25 per cent acetic acid. It was planned to graft skin on the area over the dorsal surface of the left forearm after the infection subsided. However, a trial of red blood cell paste was instituted with daily applications to the raw surfaces of the wound (fig. 4). The central portion of the crust which had formed was removed frequently to allow the escape of pus, and another coat of red blood cell paste was reapplied. The discharge subsided and the burned area rapidly healed, complete epithelization taking place in three weeks. The results in this case were dramatic.

The other cases treated were open lesions of traumatic wounds with loss of substance in which the circulation was not impaired but healing was not progressing favorably (fig. 5). These cases healed satisfactorily and quickly with the red cell paste.

### COMMENT

The mode of action of the red blood cell paste is undetermined. The most plausible theory is that required nutritional elements or proteins are supplied to tissue which may be deficient in these substances because of inadequate circulation. The red blood cells appear to be absorbed to a certain degree by the tissues until the granulations reach the surface and a crust forms. This crust of red blood cells apparently serves the function of protection, a source of nourishment and as a scaffolding for the support of the connective tissue. The new epithelium extends over the surface under the crust, and when the latter drops off the surface is completely covered. The red blood cells appear to stimulate the growth of granulation tissue and then act as a medium for the growth of epithelial cells over the granulating surface. This is important, since the most frequent problem in connection with an extensive granulating wound is to get the epithelium to grow over the surface.

Naide [3] has successfully utilized autogenous whole blood in the treatment of ulcers and has obtained more favorable results with the use of concentrated plasma. Seldon and Young [4] have applied dried red blood cells to open wounds with good results. In a similar manner we have used lyophilized red blood cells on a number of ulcers and granulating wounds but discontinued their routine use because severe burning pain was frequently produced at the site of the wound. However, the red blood cell paste definitely tended to relieve rather than produce pain. The powdered red cells have certain particular advantages in that they form a stable product which can be preserved indefinitely under all conditions of temperature without refrigeration, and their use is more valuable in wounds with a profuse discharge.

### SUMMARY AND CONCLUSIONS

1. The method of preparation and use of human red blood cell paste for topical application that has been presented is not a panacea for chronically infected wounds but may be successfully employed in selected cases in which the slow healing is the result of local circulatory impairment. In our group of cases it was in this type of wound that the best results were obtained. This method is not indicated in tuberculous or syphilitic ulcers.

2. Sixty-six patients with open wounds have been successfully treated with red blood cell paste and powdered red blood cells. Four cases failed to improve under this method of therapy.

3. The data obtained from a careful study of the use of red blood cell paste in 24 patients with indolent ulcers, old infected burns and extensive granulating wounds was tabulated.

4. Fifteen indolent ulcers which had been found resistant to other methods of therapy were treated with the local application of red blood cell paste. Nine of ten varicose ulcers were healed and only one failed to improve. Two cases with ischemic ulcers healed. One case (complete paraplegia) with an extensive decubitus ulcer was healed completely; another showed definite and progressive improvement, but a third with multiple extensive decubitus ulcers of long duration failed to respond.

5. Other lesions, such as infected burns and extensive granulating wounds, favorably responded to this method of therapy.

6. These results show that a by-product of plasma production may be utilized as an effective therapeutic agent in the treatment of open wounds.

3. Naide, M.: Treatment of Leg Ulcers with Blood and Concentrated Plasma, Am. J. M. Sc. **205**: 489-493 (April) 1943.

4. Seldon, T. H., and Young, H. H.: Use of Dried Red Blood Cells in Wound Healing, Proc. Staff Meet., Mayo Clin. **18**: 385-389 (Oct. 20) 1943.

## *Clinical Notes, Suggestions and New Instruments*

### BILATERAL SPONTANEOUS PNEUMOTHORAX

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MEDICAL CORPS, ARMY OF THE UNITED STATES
Chief and Assistant Chief Respectively of the X-Ray Service

In a series of over 5,000 patients we have had 4 instances of spontaneous pneumothorax. One of these proved to be of tuberculous origin. All 4 occurred on the right side. Three of the patients recovered completely. The case we are reporting ended fatally. The condition of pneumothorax simplex was first described by MacDowel in 1856. In some of the cases described a rupture of a valve vesicle on the lung was thought to be the cause; in the majority of the cases no cause was found. In about 25 per cent of cases recurrence in the same lung field was reported. An uncommon form, called the alternating type, was found in a small percentage of cases. In this type one pneumothorax healed fully, and some time later the other lung developed a pneumothorax. The rarest type was the bilateral spontaneous pneumothorax, in which one side ruptured before the original rupture had time to heal. It was because of this rarity that this case was presented. Being far removed from sources of statistics, we do not know how many cases of this type have been reported. We hope this case will add to the record.

### REPORT OF CASE

On Aug. 19, 1943 a white soldier aged 27 was admitted to the hospital because of pain in the left side of the chest. There was nothing remarkable in his family history. His mother died of carcinoma of the uterus. His father was killed in the mines. One brother has "miners' asthma." One younger sister died of heart trouble. Five brothers and two sisters are living and well. As a child he had measles, mumps and chickenpox. As a youngster he was struck by an automobile and remained in coma for twenty-four hours. In 1928 he had his tonsils removed. In civilian life he was employed by an advertising firm. In the Army he was trained as an airplane

Major Henry C. Dorris, Chief of the Medical Service, and Capt. Marvin N. Solomon, Chief of the Laboratory Service, helped in this case.

mechanic. He has been in the Army twenty months and has had no previous hospital admission. On August 7 he developed a severe type of diarrhea, nonspecific in nature. This lasted eight days, and he recovered completely under symptomatic treatment. He was well until the morning of August 18, when he developed a pain in the center of his back, following the lifting and turning around of a fighter plane. He continued to work, however, and remained on duty without much difficulty. The next morning, August 19, while resting in bed, he was suddenly taken with an agonizing pain in the left side of the chest and especially in his left shoulder region. As he described it "it seemed like the strongest sensation; my chest filled up with gas and my left chest seemed to tighten upon me." It is interesting to note that the first medical officer to see him a short while later found him improved but noted a rigid abdomen and sent him into the hospital with a tentative diagnosis of perforated duodenal ulcer.

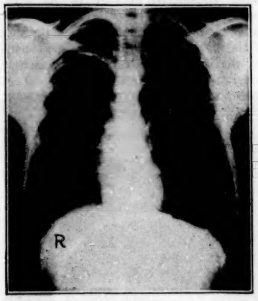


Fig. 1.—Left pneumothorax, Aug. 19, 1943.

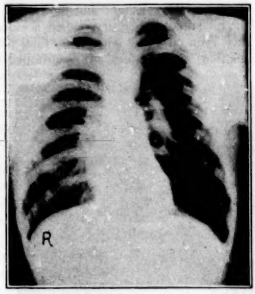


Fig. 2.—Reexpansion of left pneumothorax, Aug. 23.

The patient was well developed and nourished. He was not in acute distress. His color was good, though there was a tinge of cyanosis to his lips. His pulse rate was 92, respiratory rate 26, temperature 97.8 F. and blood pressure 110/80. A routine urine examination and complete blood count were noncontributory. The left side of the chest bulged laterally. There were no breath sounds in this region. Percussion revealed intensified hyperresonance in the entire left chest. His heart was slightly displaced to the right. He was given codeine and later pentobarbital sodium. In a short time, he felt better and had a restful night. He was carefully watched for a possible tension pneumothorax.

On August 23 breath sounds were heard in the upper part of the left chest. He felt well. There was no dyspnea nor cyanosis. He was doing very well, when on August 29, ten days after his admission to the hospital, at 4:50 a. m., he suddenly became extremely dyspneic and resembled a patient in a severe asthmatic attack. It is interesting to note that thirty minutes prior to this the nurse found him sleeping peacefully. Examination now revealed that his breathing was entirely abdominal. There was no expansion of either side of the chest. A few breath sounds were heard in the left chest but none in the right. He became very cyanotic and complained of agonizing pain in his right chest and right shoulder. His respirations rose to 60 per minute; they were labored and gasping in character. Air hunger became manifest. His pulse rose to 160. It was regular, though poor in quality. Hyperresonance was present in both chests, more so on the right. His condition appeared critical.

The patient was placed in an oxygen tent. A needle was then introduced into the fifth right interspace in the outer axillary line. Air rushed out under considerably increased pressure. Immediately the patient's air hunger was relieved. His breathing became less gasping and struggling in character. His color improved. Subaqueous drainage was instituted. At 5:50 his respirations were down to 34. His pulse rate dropped to 120. A slight cyanosis remained. He was very cooperative and had no pain in his chest. At 7 p. m. of the same day his pulse rate fell to 90. His respirations remained at 34, and he was comfortable and had no complaints. At 11:50 p. m. he suddenly became restless. Though his respiratory rate remained at 35, he suddenly developed intense air hunger. He appeared struggling for air while in the oxygen tent. His pulse was 76, and cyanosis was moderate. On August 30 at 9 a. m. his respirations suddenly dropped to 18, his pulse rose to 140 and cyanosis became deep. He became mentally depressed and did not respond to any painful stimuli. His pupils were pin point. The total amount of morphine administered in the past twenty-four hours was 1½ grains (0.1 Gm.). At 9:50 a. m. his respirations were deep and of Cheyne-Stokes character. His pupils became dilated. Tracheal rales became audible. Cyanosis deepened and became generalized. He was perspiring freely. He died at 10:25 a. m.

An autopsy was performed several hours after death. Both lungs were found collapsed within their respective cavities. That of the left was slightly more expanded than that of the right. There was less than 10 cc. of free fluid in the left chest cavity. The heart was slightly displaced to the right. The right auricle was much distended. The right ventricle was also greatly distended. On the medial aspect of the left upper lobe, about 5 cm. below the apex, was a small area that was slightly raised from the surrounding pulmonary tissue, about 8 mm. in diameter, the center of which had a small tissue defect.

There was no evidence of a tear in the serosa of the right lung. There was no evidence, either by gross or by microscopic examination, of tuberculosis. The rest of the autopsy was noncontributory.

The anatomic diagnosis was atelectasis, pulmonary, bilateral, caused by pneumothorax, pulmonary, bilateral, spontaneous.

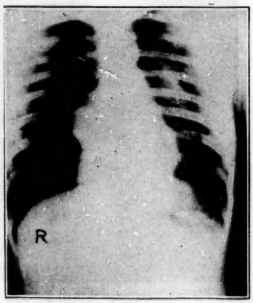


Fig. 3.—Left and right pneumothorax, August 27, 7 a. m.

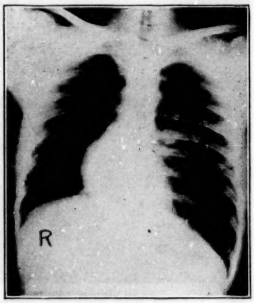


Fig. 4.—Left and right pneumothorax, August 27, 11 a. m.

We were fortunate in taking x-ray films of each pneumothorax. Figure 1 reveals the first left pneumothorax and was taken on the day of admission. Figure 2 reveals a partial expansion of the left pneumothorax and was taken on August 23. Figure 3 reveals a right pneumothorax in addition to the previous left pneumothorax and was taken on August 27 at 7 a. m. Figure 4 reveals similar findings as in figure 3 and was taken the same day but four hours later.

## A NEW RAPID METHOD OF INTUBATION WITH THE MILLER-ABBOTT TUBE

FRANKLIN I. HARRIS, M.D., SAN FRANCISCO

One of the major advances in the treatment of small bowel obstruction has been the development of the technic of intestinal intubation with the Miller-Abbott tube. Numerous reports show a considerable decrease in the deaths from intestinal obstruction when this method has been used. This reduced mortality depends, however, on a successful intubation and the maintenance of continuous suction of the obstructed bowel.

Intubation of the Miller-Abbott tube into the small bowel has been at times extremely difficult and occasionally impossible. Many patients are denied the life saving advantages of this treatment because of failure to master the technic of intubation. The principal obstacle to successful intubation is in the passage of the tip and its attached rubber balloon through the pylorus and into the duodenum. The tube has frequently a tendency to coil and even twist itself into a figure of eight knot in the stomach. Even if no coiling takes place, the tip may float along the lesser curvature for many hours and engage itself in the antrum or the pyloric ring. In the desperately sick toxic patient this delay may be extremely serious. Occasionally the tube may enter the duodenum but descend no farther even after inflation of the balloon. The urgent need for a more certain and rapid method of facilitating passage of the tip through the pylorus and duodenum has been recognized by all surgeons using intubation. The standard methods are well known and have been adequately described by Blodgett[1] and other writers. These methods need no further elaboration and are familiar to all who use intestinal intubation. The use of a wire stylet to pass the tip rapidly through the pylorus has recently been advocated by W. Osler Abbott.[2] I have had no experience with this method, but it seems quite complicated and not without danger of perforating the bowel or stomach. Abbott reports only two failures with this method in eighteen attempts.

My purpose in this preliminary report is to describe an experience with the use of liquid metallic mercury as an aid to secure certain passage of the tip of the Miller-Abbott tube into the small bowel. Although Wilkins[3] in 1928 used metallic mercury as a weight in the bucket of his single lumen nasal tube, its use in the double lumen tube in the manner herein described is original. The idea of using metallic mercury within the rubber balloon attached to the tip of the Miller-Abbott tube was originally considered because of its great weight and its fluidity and flexibility as well as because metallic mercury, when accidentally swallowed, rapidly passes through the entire intestinal tract and is excreted without any poisonous effect. It was hoped that the introduction of metallic mercury into the rubber balloon might act to carry the tube rapidly into the small intestine.

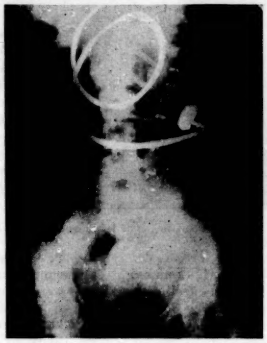

Fig. 3. — Eight hours later, continued descent of Miller-Abbott tube without air inflation. Small bowel obstruction practically completely relieved (case 2).

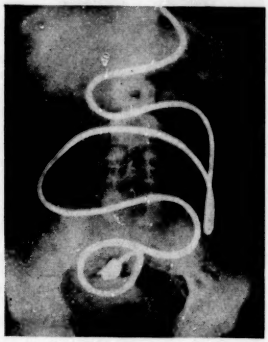

Fig. 4. — Position of Miller-Abbott tube twelve hours after introduction with mercury and air inflation of the bag (case 2).

An experience with 19 cases of small bowel obstruction during the past two years has justified this hope. With the use of this new technic there has been no failure in passing the tube into the obstructed bowel. The length of time necessary to pass the tube has been considerably shortened, and it has been also demonstrated that the weight of the mercury itself may carry the tube down the obstructed intestine without even inflating the rubber bag. This preliminary report is intended only to describe this new aid to intestinal intubation. At a later date a more comprehensive report will be presented covering this series of cases.

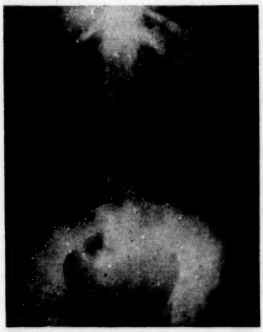

Fig. 1.—Small bowel obstruction due to wound dehiscence (case 1).

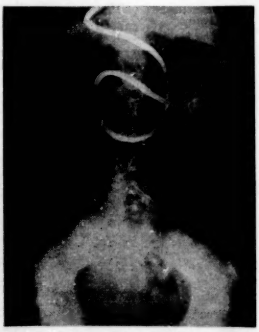

Fig. 2.—Miller-Abbott tube filled with mercury passed into small bowel eight hours after surgery. Note that there is no air in the bag (case 1).

### TECHNIC

If metallic mercury is to be used in the Miller-Abbott tube, the rubber bag should be carefully tested before introducing the tube into the stomach. This bag should be tested for air capacity and freshness of the rubber. The tube is then passed by the nasal route into the stomach in the usual manner. After the stomach has been emptied of its contents the patient is placed on his right side in the semi-Fowler position and from 4 to 8 cc. of liquid metallic mercury is injected into the rubber balloon through the smaller inner lumen of the double lumen tube. This injection is done by means of a 10 cc. luer syringe. The rubber bag, however, is not inflated with air at this time. The optimum amount of mercury to be used has not as yet been exactly determined and does not appear to be of great importance. In this series the minimum amount has been 4 cc. and the maximum 8 cc. After the injection of the mercury the drainage lumen is connected to a continuous Wangensteen type of suction and the character of the drainage

From the Division of Surgery, Mount Zion Hospital.

1. Blodgett, J. B.: A Technic for the Satisfactory Use of the Miller-Abbott Tube, Am. J. Surg. **53**: 271 (Aug.) 1941.
2. Abbott, W. O.: Indications for Use of Miller-Abbott Tube, New England J. Med. **225**: 641 (Oct. 23) 1941.
3. Wilkins, J. A.: Mercury Weighted Stomach Tube, J. A. M. A. **91**: 395 (Aug. 11) 1928.

carefully noted. About every fifteen minutes 1 inch of the tubing is fed into the stomach. In some patients within one-half to one hour the tube will start moving down spontaneously. It is important that a loop of slack tubing be left alongside the nares so that this spontaneous descent may be observed. In some cases it will take from two to six hours before the tube starts to descend spontaneously. When the appearance of the drainage changes to characteristic yellowish green small bowel contents or the tube has spontaneously been drawn into the stomach over 12 to 18 inches, it is assumed that it is then in the upper small bowel. It is then advisable to take a flat x-ray film, which will more accurately show the position of the tube. The mercury in the bag is an excellent opaque substance to demonstrate the exact position of the head of the tube (fig. 1).

If there is definite proof of its passage beyond the pylorus by x-ray or by the presumptive signs described, the rubber bag may be inflated with 25 to 40 cc. of air and the standard technic of the Miller-Abbott tube procedure then used. However, in the last 6 cases inflation of the rubber bag was not done. It was found that the weight of the mercury in the bag was sufficient to carry the tube well down into the obstructed bowel. If subsequent experience substantiates this observation it will be unnecessary to inflate the rubber bag and will give rise to the possibility of using a single lumen tube weighted with mercury for purposes of intestinal intubation. I have under consideration the use of such a tube experimentally and clinically as soon as I am able under wartime conditions to obtain its manufacture.

The withdrawal of the Miller-Abbott tube when used with mercury in the rubber bag is no more difficult than with the regular technic. If air has been used to inflate the bag, the air must first be removed to collapse the bag preparatory to removal of the tube.

The use of mercury in the manner described seems to eliminate the one great technical obstacle to certain and rapid intubation. Objection might be raised to this method on the theory that there is possibility of rupture of the rubber bag, which would permit the escape of free metallic mercury into the intestinal tract. This accident has not yet occurred in my experience, but should it happen there is little danger of mercury poisoning. Metallic mercury is not supposed to be a poison. According to the United States Dispensatory (1907 edition) mercury is sometimes given in the metallic state in quantities of a pound or two in obstruction of the bowel and acts by its weight. In the uncombined state it is inert and insoluble in ordinary solvents and even in concentrated hydrochloric acid. Dr. A. Rossen, former surgical resident at Mount Zion Hospital, has fed metallic mercury to laboratory animals such as dogs and guinea pigs in the amount used in the Miller-Abbott tube, and the metal has rapidly been eliminated without any apparent toxic effects. Search of the available pharmacologic textbooks has failed to show any definite statement that metallic mercury is poisonous. If the rubber bag is carefully tested by inflation with air before its introduction, the danger of leakage or breakage is most remote.

## SUMMARY AND CONCLUSIONS

Liquid metallic mercury in amounts of from 4 to 8 cc. has been injected into the rubber bag of the Miller-Abbott tube to facilitate a more rapid and certain intubation.

In a series of 19 consecutive cases of obstruction of the small bowel the Miller-Abbott tube has been quickly and successfully introduced with the aid of this new technic.

It appears that the weight of mercury itself may carry the tube into the small bowel without the necessity of air inflation of the rubber bag.

Clinical and experimental work is contemplated with a new type of single lumen, mercury weighted, intestinal tube.

450 Sutter Street.

## A NEW NASAL CATHETER HOLDER

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LAWRENCE, MASS.

It occurred to us that the ordinary methods of holding a nasal catheter in place might be improved on. With this in mind several pieces of apparatus were tried, including some that have previously been described, but we feel that the

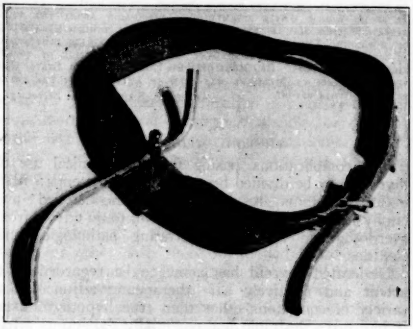

Fig. 1.—Nasal catheter holder.

simplicity of this holder, its inexpensiveness and the effectiveness of its use, particularly in the comfort to the patient, warrant its description to the medical profession.

It is composed of a piece of elastic suspender for a head band with a buckle attached; a swivel, double adjustable unit through which the elastic is passed, and a piece of hollow

Fig. 2.—Holder in use.

metal tubing through which the nasal catheter is passed for satisfactory holding. The tubing may be adjusted in two planes to fit any patient.

The accompanying illustrations show the apparatus itself and the view of a patient five days after an intestinal resection. The patient had worn this continuously since his operation and had no complaints. This holder has also been used on other patients and there have been no apparent discomforts or criticisms.

From the surgical service of the Lawrence General Hospital.

## Council on Pharmacy and Chemistry

# UNTOWARD EFFECTS OF ENDOCRINE THERAPY

SINCE THE NUMBER OF HORMONE PREPARATIONS HAS INCREASED DECIDEDLY IN THE PAST DECADE, MANY PHYSICIANS FIND IT DIFFICULT TO KEEP ABREAST OF THE RAPID ADVANCES IN THERAPY. THE INCREASED POTENCY OF SEVERAL ENDOCRINE PREPARATIONS IMPLIES AN INCREASED DANGER FROM CARELESS USE. MUCH OF THE EASILY AVAILABLE INFORMATION ABOUT THE NEWER PRODUCTS IS DRAWN FROM PACKAGE INSERTS OR PROMOTIONAL LITERATURE WHICH ARE NOT ALWAYS ENTIRELY UNBIASED. IT SEEMS WORTH WHILE ASSEMBLING A DISCUSSION ABOUT THE TOXIC EFFECTS WHICH MAY RESULT FROM MISTAKEN OR INDISCRIMINATE USE OF HORMONE. THIS WILL HELP PHYSICIANS TO RECOGNIZE LIMITATIONS AS WELL AS POSSIBILITIES ATTENDANT ON THE PRESCRIPTION OF POTENT ENDOCRINE PRODUCTS. DR. RUTH H. ST. JOHN OF OHIO STATE UNIVERSITY COLLEGE OF MEDICINE HAS BEEN OF ASSISTANCE IN THE PREPARATION OF THIS REPORT. AUSTIN E. SMITH, M.D., Secretary.

### THYROID MEDICATION

The complications arising from the clinical use of thyroid may be divided broadly into two groups: first, toxic symptoms resulting from uncontrolled and unphysiologic use of thyroid; second, toxic effects from overdosage in cases demonstrating pathologic complexities.

Desiccated thyroid has come to be regarded as a potent and relatively safe therapeutic adjunct in a variety of conditions other than true hypothyroidism. It has three desirable but potentially dangerous attributes: it acts as a stimulant, it is orally effective and it can be obtained at low cost. These properties have led to a widespread empirical use by the doctor and to self medication by the patient.

Production of hyperthyroidism, with the accompanying symptoms of accelerated heart action, profuse sweating, diarrhea and nervousness, is the condition to be most feared in uncontrolled thyroid medication. All too frequently patients who have been placed on thyroid therapy will fail to report for periodic examinations. Responsibility for such failure must rest to a great extent with the physician. It is important to stress the need for follow-up examinations and in many cases to regulate the dosage, depending on the ability of the patient to follow instructions. Also the physician must be constantly aware that in thyroid he is dealing with a powerful metabolic regulator, and critical judgment must be employed when the temptation arises to prescribe it in the absence of clinical signs of hypothyroidism. This is particularly true in cases of obesity in which no thyroid deficiency can be demonstrated. If weight reduction does occur concomitant with its use, it is generally felt to be due to the production of a pathologic state of hyperthyroidism.[1] Critical thought must also be given to the empirical use of thyroid for prepuberal and adolescent girls. Whereas apparent beneficial stimulation is frequently obtained, it would appear that the unintentional production of a hyperthyroid state might have serious effects on the organism as a whole and specific damage might occur to the delicate balance of the thyrogonadal relationships which are present at this time.[2] It is also possible that normal thyroid function may be reduced by the long continued use of thyroid in high dosage levels.[3]

The second group of toxic complications embraces the less frequent but very serious effects of high thyroid dosage in certain disease entities. Recently attention has been directed to a condition termed "pituitary myxedema."[4] These patients present, in addition to the common signs of thyroid deficiency, additional signs of hypopituitarism and low adrenal function. High thyroid dosage will precipitate in such cases the dangerous symptoms of the acute crisis typical of adrenal insufficiency. Obviously, thyroid therapy used in Addison's disease would subject the patient to the identical danger of producing such a crisis.

In true myxedema the heart picture is one of potential myocardial insufficiency. Care must be used in establishing the individual tolerance of the patient to adequate thyroid dosage in order to avoid undue strain on the weakened heart.

The presence of coronary heart disease is also a contraindication to high thyroid dosage. It is extremely important in all adult patients for whom thyroid therapy is contemplated to obtain a careful history and physical examination in the search for the possible existence of coronary disease.[1]

It is often noted that in the presence of severe thyroid deficiency the initial doses of thyroid are at times poorly tolerated. When this occurs the physician holds a definite responsibility to his patient, particularly in the hypothyroidism of childhood. Thyroid therapy should not be abandoned if the need for it has been accurately determined.[5] Lower dosage levels should be tried, and it is possible that there may be a variation in the clinical response to different commercial thyroid products.

It is extremely important for the physician to realize the variation which exists in the potency of thyroid extracts.[6] In order to maintain carefully controlled medication it would seem wise for the physician to make use of preparations which meet the requirement of the U. S. Pharmacopeia for standard thyroid.

### ADRENAL CORTEX EXTRACTS AND DESOXYCORTICOSTERONE

The availability of potent adrenal extracts and of synthetic desoxycorticosterone has meant the maintenance of life for many patients with Addison's disease. So far there has been no evidence of toxic effect incident to the use of natural adrenal cortex extracts in treatment of true adrenal insufficiency.[7] Possibly the only danger in the use of adrenal cortex extract is that of inadequate dosage. Some of the commercial preparations have been of low potency, and it is important for the physician to assure himself of the potency of any product he prescribes until a definite standard of potency has been adopted.

The use of desoxycorticosterone acetate, which has the advantage of higher potency and lower cost, presents a number of hazards. Desoxycorticosterone does not control carbohydrate metabolism. Additional measures must be employed to treat the hypoglycemic trends which characterize Addison's disease.[8] In the use of this synthetic drug there are decided dangers in over-

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medication and in uncontrolled medication. Such complications of therapy include edema, hypertension, cardiac insufficiency, muscular weakness, joint and muscular pains and hypoglycemia. These toxic reactions are due in general to the increased load on the cardiovascular system resulting from the increase in blood volume and blood pressure and to the pronounced retention of sodium chloride and the lowering of serum potassium. Careful regulation of sodium, potassium and water intake is important in the therapeutic regimen.[9] It is also important for the clinician to familiarize himself with approved dosage levels in the use both of the synthetic and of the natural hormone, since it is not always possible, particularly in an emergency, to rely on commercial literature for directions.

Experimental work has been conducted in the use of adrenal cortex preparations in conditions other than Addison's disease. Surgical and traumatic shock, asthenia, hypotension and fatigue are some of the clinical conditions for which the use of the extracts has been urged. In general, the results have been disappointing and have failed to substantiate the commercial claims. The general practitioner who wishes to attempt such empirical therapy should be aware of the possibility of toxic complications when the synthetic hormone is used.

### ESTROGENIC SUBSTANCES

Estrogen therapy has become increasingly popular in the last few years, and the introduction of the inexpensive and orally effective synthetic stilbestrol derivatives has contributed greatly to the hazards incident to uncritical use. Fortunately the toxic complications of nausea, headache and general malaise, which occasionally occur in the course of diethylstilbestrol therapy, are transitory and may usually be controlled by reducing the dosage level.[10] There is apparently no evidence to substantiate the fear that serious liver, kidney or bone marrow damage may develop,[11] but careful investigators realize the clinical uncertainty which exists regarding drugs that are capable of producing toxic effects.[12]

The abnormal degree of endometrial hyperplasia which may result from excessive or prolonged administration of natural or synthetic estrogens should be a source of some apprehension. Two primary possibilities should be considered. First, a persistent effect may be produced leading to cystic endometrial glands,[13] and, second, such hyperplasia might stimulate a latent neoplastic growth.[14]

It has been shown that some hormones exhibit a carcinogenic property in animals. This is particularly true of estrogens.[15] A carcinogenic effect has not been demonstrated in human beings,[16] but the proliferative action of estrogens on the endometrium must be regarded as a potential stimulator of preexisting neoplastic growth. With this in mind, prolonged administration of estrogenic materials should be guarded against, particularly with patients who present a hereditary background favoring neoplastic growth.[17] Frequent pelvic examinations should be made in the course of estrogen therapy, particularly when estrogen withdrawal bleeding has been known to occur, in order to differentiate between such bleeding and that of early cancer.

There is a considerable degree of misunderstanding with regard to the choice between estrogens and gonadotropic materials in the correction of menstrual disorders. Estrogenic substances do not stimulate ovarian function. They may be used to stimulate uterine growth and development in hypoplastic conditions and may be relied on as replacement medication in primary ovarian failure and in natural or surgical atrophy or removal of the ovaries; but, when ovarian stimulation is sought, pituitary or equine gonadotropic materials must be employed.

There are many types of ovarian dysfunction in which estrogen therapy has been employed. In general it might be said that the rationale of such therapy in conditions other than those mentioned is the attempt at restoring what is regarded as a disturbed physiologic balance between estrogens and progesterone. When such therapy is used, a cyclic plan should be followed. Pathologic effects may result from the unphysiologic use of an estrogen in the last half of the menstrual cycle. There is evidence that normal corpus luteum function may be depressed with resultant short cycles and variable flows.[18] When large doses of an estrogen are used in young women, ovulation may be inhibited. This procedure has been employed as a means of treating dysmenorrhea and would appear to be an undesirable practice during the child bearing age.[19]

### PROGESTERONE

Progesterone therapy is being tried in a variety of gynecologic conditions, but as yet its uses are not clear.[20] It is a replacement for deficient corpus luteum hormone activities and does not have a direct stimulative effect on the ovaries. It is thought by some investigators to be of value in certain types of dysmenorrhea, in habitual abortion and in functional uterine bleeding.[19] Other reports show disappointing results in these conditions, particularly with regard to the quieting effect of progesterone on uterine muscles.[21]

Substitution therapy combining estrogens and progesterone in a cyclic plan of treatment has been effective in inducing normal menstrual cycles both in amenorrhea and in functional bleeding.[22] However, the expense of progesterone medication is prohibitive in many cases, and critical judgment should be employed before subjecting the patient to an experimental type of therapy.

The physician must also be warned against the use of unstandardized preparations. There are still corpus luteum extracts on the market which contain little if any of the active progesterone.[13]

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### TESTOSTERONE

*Use in the Female.*—Testosterone propionate (injectable) and methyl testosterone (oral) have come into recent use in the female as a means of inhibiting abnormal uterine bleeding. Although the mode of action has not been definitely determined, it is thought that these compounds may act by suppression of pituitary gonadotropic activity, by inactivation of estrogens or by inhibition of the proliferative capacity of the endometrium.[23]

There is a justifiable fear attendant on such therapy, since masculinizing symptoms have been known to appear. These symptoms, frequently referred to as "arrhenomimetic," include excessive hair growth, hoarseness, deepening of the voice, acne and enlargement of the clitoris.[24] The dosage level is of great importance. Such masculinizing effects have rarely occurred when the total dose has been kept under 300 mg. per month. Fortunately, if such symptoms do occur, they are usually transitory, seldom persisting more than a few weeks following cessation of therapy.[23] However, cases have been reported of voice changes persisting more than two years after discontinuing therapy.[25]

It is generally agreed that androgen therapy should be carefully controlled to avoid such difficulties and that the use of the vaginal smear for estrogenic activity provides a reliable indicator of the suppressive action of the androgenic hormone. Vaginal smears will demonstrate the degree of estrogenic depression long before the clinical occurrence of arrhenomimetic symptoms.[26]

*Use in the Male.*—In the male, androgen therapy has been regarded with certain misgivings when used in prepuberal and adolescent boys. Fears have been expressed regarding the possibility of producing precocious puberty,[27] premature closure of the epiphyses with the subsequent stunting of growth[28] and atrophy of the testicles.[29] Recent studies are more optimistic and tend to stress the stimulating effects on growth and genital development.[30] Since testosterone therapy is still in an experimental state, the patient under treatment must be carefully observed for untoward effects and the dose varied according to individual response.

In castrate and eunuchoid cases and in the male climacteric, testosterone provides a potent replacement therapy.[27] Oral medication with methyl testosterone has proved satisfactory and has facilitated such treatment, but both oral and parenteral therapy are expensive to the patient, since the treatments are often necessarily prolonged. Only occasionally have the transient effects of headache or nausea appeared with the use of testosterone.

### GONADOTROPINS

Gonadotropic material is available from three sources: (1) chorionic, obtained from the urine or placenta of pregnant women; (2) the combined pituitary hormones obtained from extracts of the anterior pituitary lobes of domesticated animals; (3) gonadotropic substances obtained from the serum of pregnant mares.

*Chorionic Gonadotropins.*—It is generally conceded that chorionic gonadotropins do not have the properties attributed to pituitary or equine gonadotropins. Chorionic material does not stimulate the ovary to follicle formation or to ovulation, nor can it be utilized in other instances when substitution therapy is required for anterior pituitary deficiency.[31]

In the female, chorionic gonadotropins are apparently of some value in sustaining corpus luteum function, but this factor has not as yet been proved to be of clinical value.[32] The use of chorionic material in functional bleeding and in dysmenorrhea has no sound scientific basis,[33] and recent investigations tend in general to discourage its use in gynecologic practice.[34] Other benefits which commercial literature claims for the use of chorionic gonadotropins have not as yet been proved to be dependable. Obviously, its therapeutic value is still in the experimental stage.

In the male, chorionic gonadotropins have been shown to act as a potent stimulator of the interstitial tissue of the testicle which justifies their use in treatment of undescended testicles and genital underdevelopment. Frequent observation of the patient is to be urged in order to avoid excessive enlargement of the genitalia which may result from prolonged administration of the material.[35] It is thought by some investigators that antibody formation will occur in the course of long continued therapy, and perhaps this development may be avoided by discontinuation of the injections at regular intervals.[36]

*Pituitary and Equine Gonadotropins.*—In spite of lack of certainty regarding the exact nature of the pituitary hormones and the subsequent difficulties encountered in standardizing commercial products there are a number of such preparations on the market, and many claims are made for their use.

There are a number of limitations in the use of gonadotropic material. In spite of continued attempts to reduce the protein content of the material, the patient may exhibit an allergy to these proteins, with symptoms varying from mild local reaction at the site of injection to severe anaphylactic shock. It is also possible that sensitivity may develop following a course of treatment, with serious results from subsequent injections.[15] Antibody formation is also to be considered; discontinuing injection at regular intervals during a course of treatment is thought to reduce this risk.[36] The chief handicap, however, in the clinical use of pituitary and equine gonadotropins is the low and

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variable potency and the high cost of commercially available preparations. All these factors make it extremely important for the physician to give his patient the benefit of a careful and critical diagnostic appraisal before subjecting the patient to a long, expensive and possibly futile course of therapy.

In the female, endometrial biopsies and vaginal smears for determining estrogenic activity are extremely valuable diagnostic measures to be employed in evaluating the initial degree of ovarian activity and the possibility of obtaining response to gonadotropic therapy. When primary ovarian failure is shown to exist, no stimulative action may be expected to result from the use of gonadotropic therapy. If the ovarian dysfunction is thought to be the result of inadequate pituitary stimulation, pituitary or equine gonadotropins may be useful. It has been suggested that equine gonadotropins possibly have a more specific gonadal effect than anterior pituitary lobe preparations, since the latter must necessarily include other pituitary hormonal factors.[34] However, it is generally conceded that gonadotropic therapy is still unsatisfactory and will remain so until pure gonadotropic principles can be elaborated from the anterior pituitary lobe.[37]

In the male, certain types of infantilism or delayed puberty may respond to pituitary or equine gonadotropic therapy with the result of increased growth and genital development.[35] In all conditions, in both male and female, symptomatic improvement after a reasonable trial of therapy must necessarily be a measure of successful therapy. If no beneficial changes occur, there is no value in continuing the therapy.[38]

Recently an attempt has been made to determine the synergistic effect of combined chorionic and pituitary gonadotropin. There is one such mixed product on the market. The clinical effect in human beings is still under investigation.[39] Experimental work indicates a very high degree of stimulation in rat ovaries with use of the combined preparations. Although the manufacturers of the product warn against uncritical use of the material, it has nevertheless been used without proper concern for the possible deleterious effect on the ovaries.

### PITUITARY GROWTH HORMONE

There are several pituitary products on the market which are claimed to contain a relatively high concentration of the "growth factor."[40] Since it is still impossible to isolate or identify the separate principles of the pituitary hormone, the potency of such products must remain questionable. An attempt at standardization has been made, using rat growth units, but such standardizations are not uniform as between competing products. The complications involved in the use of growth hormones are the same as those described for any of the pituitary gonadotropic materials.

If the use of the growth promoting factor is to be considered, the physician owes it to his patient to explain the experimental nature of such therapy. The physician must also be aware of the complex relationships between growth and genital development and should insist on frequent observation of the patient in order to avoid untoward effects. In cases of uncomplicated dwarfism, when x-rays show the epiphyses of the long bones to be open, growth has been stimulated in a number of reported cases, but unfortunately such response is not dependable.[41]

### POSTERIOR PITUITARY PRODUCTS

The commercial products of the posterior lobe of the pituitary gland include the water soluble principles of the whole posterior lobe, the powdered posterior pituitary substance and the fractionated extracts described as oxytocic and pressor factors. The therapeutic effects of these products are related to cardiovascular, renal, gastrointestinal and obstetric action.

There have been many reports of hypersensitivity to these products.[42] In general, the toxic effects are those of shock, with symptoms of pallor, rapid pulse, fall in blood pressure, air hunger, edema and coma. These symptoms may be alleviated by the use of epinephrine.

Certain specific dangers may be related to the cardiovascular effect, and care should be used in administering posterior pituitary products to patients who have preexisting heart disease. The specific dangers of careless use of the oxytocic principle in obstetric cases are fairly well known. Rupture of the uterus, laceration of the cervix and cardiac death due to the sudden strain of physical exertion in labor are some of the reported effects of uncontrolled therapy.

The intestinal stimulation obtained by use of the pressor fraction is of clinical value in treatment of paralytic ileus and postoperative distention but may be a source of toxic irritation in the long continued use of posterior pituitary substance in treatment of such conditions as diabetes insipidus. Too large a dose will occasionally produce intestinal cramping and pain, and it is important to adjust the dosage level to a point where such effects will be obviated.[35]

37. Geist and Salmon.[34] Davis and Hellbaum.[34]
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## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

**NEO-SYNEPHRINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1944, p. 284).

The following additional dosage forms have been accepted:

FREDERICK STEARNS & CO., DETROIT

**Solution Neo-Synephrine Hydrochloride, ¼ per Cent:** 15 cc. neo-synephrine hydrochloride ¼ per cent, sodium chloride 0.1 per cent, boric acid 2.2 per cent with chlorobutanol 0.4 per cent and sodium bisulfite 0.5 per cent as preservatives in an aqueous solution.

**Solution Neo-Synephrine Hydrochloride, 2½ per Cent:** 15 cc. neo-synephrine hydrochloride 2½ per cent, ascorbic acid 1.0 per cent as a stabilizer, chlorobutanol 0.4 per cent and sodium bisulfite 0.1 per cent as preservatives in an aqueous solution.

**Solution Neo-Synephrine Hydrochloride, 10 per Cent:** 4 cc. neo-synephrine hydrochloride 10 per cent, ascorbic acid 1.0 per cent as a stabilizer, chlorobutanol 0.4 per cent and sodium bisulfite 0.1 per cent as preservatives in an aqueous solution.

**RIBOFLAVIN** (See New and Nonofficial Remedies, 1944, p. 613).

The following dosage forms have been accepted:

WILLIAM R. WARNER & CO., INC., NEW YORK

**Tablets Riboflavin:** 1 mg.

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

**Tablets Riboflavin:** 1 mg. and 5 mg.

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SATURDAY, JULY 15, 1944

## DEFERMENT OF PREMEDICAL STUDENTS

Elsewhere in this issue (page 794) are published a letter from Congressman A. L. Miller of Nebraska to the President regarding current Selective Service regulations pertaining to premedical and medical students, and the President's reply. Granted that the premedical students involved will not become available as physicians until 1948, starting now and continuing until the war is over, students will commence premedical studies in utterly inadequate numbers. These lost premedical months or years cannot be regained after the war is over.

The President's suggestion that women and physically disqualified men can supply the need does not take into account the fact that qualified students in this category are not available in sufficient numbers now unless educational standards are drastically reduced. Furthermore, the study and practice of medicine are arduous, requiring vigorous health. These are not occupations for the physically unfit. The physically unfit cannot be expected to give an equal return in years of service to that given by those who are physically competent.

The same considerations must apply to discharged veterans. Many of these are physically unfit and emotionally unstable. This group will also include men who have previously been rejected for admission to medical schools because of failure to meet admission standards.

Certainly every favorable consideration should be given to medical school applications from veterans, to whom we are all immeasurably and forever indebted. But it would serve neither the veterans nor the public to admit to medical schools men who do not possess the required physical, emotional, mental and other qualifications.

## PATHOGENESIS OF MYASTHENIA GRAVIS

In 1930 Harriet Edgeworth reported relief of asthenia, dysphagia, diplopia and disturbance of speech when she took ephedrine by mouth. Walker in 1934 administered physostigmine salicylate to a patient with myasthenia gravis because it was thought that the muscles in myasthenia behave like muscles poisoned by curare, so that physostigmine, an antagonist to curare, might counteract the unknown substance which seemed to be exerting a curare-like effect on the motor nerve endings. Subsequently a synthetic analogue known as neostigmine replaced physostigmine as the remedy of choice, owing to its less toxic side effects. The remarkable response to neostigmine given by hypodermic injections led to its use as a diagnostic measure by Viets and Schwab. These authors [1] gave neostigmine bromide orally to 44 patients with myasthenia gravis and supplemented it with ephedrine sulfate, potassium chloride and occasionally guanidine. Forty-three of their patients had a characteristic reaction to the combined therapy of neostigmine and ephedrine. Ephedrine increased the effect of the neostigmine in 41 of the 43 cases and failed in only 2. Aminoacetic acid did not prove to be useful. Guanidine increased the effect of neostigmine in a few cases and failed in many.

Studies by Dale and by Loewi demonstrated that acetylcholine is liberated on stimulation of the motor nerves supplying striated muscles. Physostigmine enhances and prolongs muscle contraction apparently by inhibiting the destructive action of cholinesterase on acetylcholine. The abnormal fatigability in myasthenia gravis has been thought to be due to curare-like poisoning of the motor nerve endings of the myoneural junctions in the affected muscles. Gammon and Scheie stressed the clinical observation that neostigmine, which produces fasciculations in the muscles of normal subjects and of patients in a variety of diseases involving the nervous and muscular systems, failed to elicit fasciculations in patients with myasthenia gravis. Harvey, Lilienthal and Talbot [2] showed that even high concentrations of neostigmine attained in a small localized area do not produce fascicular twitches in the myasthenic subject. The fundamental defect in myasthenia gravis lies in some disturbance of the neuromuscular transmitting mechanism. The repair of this defect by neostigmine, which is known to protect the acetylcholine release of motor nerve endings from hydrolysis by cholinesterase, supports the hypothesis that in this disease the normal metabolism of acetylcholine is deranged. In the normal subject neostigmine injected intra-arterially produces a profound local

1. Viets, Henry R., and Schwab, Robert S.: The Diagnosis and Treatment of Myasthenia Gravis with Special Reference to the Use of Prostigmine, J. A. M. A. **113**: 559 (Aug. 12) 1939.

2. Harvey, A. M.; Lilienthal, J. L., Jr., and Talbot, S. A.: On the Effects of the Intra-Arterial Injection of Acetylcholine and Prostigmine in Normal Man, Bull. Johns Hopkins Hosp. **69**: 529 (Dec.) 1941.

paresis, which has been assumed to result from the accumulation of a paralyzing concentration of acetylcholine (Harvey, Lilienthal and Talbot). These authors conclude that the fundamental defect in myasthenia gravis is reduction in the quantity of the transmitting agent available or released. Acetylcholine when injected intra-arterially evokes in a myasthenic patient a powerful sustained contraction of the injected muscles. This is in partial contrast with the transitory weakness evoked in normal subjects. The analogy between myasthenia gravis and partial curarization suggests the hypothesis that a circulating inhibitory substance may be responsible for the primary neuromuscular defect. There is evidence to suggest that this hypothetical substance may arise from the thymus. This idea supported by the experience of Blalock,[3] who has recorded the instant cure of severe myasthenia gravis by the removal of a cystic tumor from the thymic region. Several cases have been reported in which the removal of a thymic tumor or hyperplastic thymus has resulted in great improvement. Postmortem examination of patients with myasthenia gravis has shown that about 50 per cent have hyperplasia, tumor or persistence of the thymus.

Harvey and his associates[4] reported great clinical improvement in 3 of 5 patients with severe myasthenia gravis following total extirpation of the thymus. The intra-arterial injection of neostigmine, in contrast to the effect before thymectomy, now produced local fascicular twitching, repetitive response to a single stimulus, normal local paresis and a depression of neuromuscular transmission. These changes indicate an increase after thymectomy of transmitter substance available at the neuromuscular junction. Apparently in some patients the thymus assumed an important role in the pathogenesis of myasthenia gravis.

Wilson and Stoner[5] found the serum cholinesterase activity in 14 patients with myasthenia gravis to be no greater than that of normal adults. Apparently the muscular wekaness in myasthenia gravis is not due to an excessively rapid destruction of acetylcholine by cholinesterase. They were able to demonstrate by means of cinecamera and ergograph studies that exercise of a remote group of muscles produces an increase in the severity of the signs of the disease. They conclude that the most probable explanation of the phenomena of myasthenia gravis is the presence of some substance in the blood which produces a block in neuromuscular transmission and inhibits the normal action of acetylcholine on voluntary muscle. The thymus may play an integral part in the secretion or control of this substance. The action of neostigmine on the myasthenic patient may be to produce some antagonistic effect on the inhibiting substance and thereby restore the normal threshold of the effector to acetylcholine.

3. Blalock, Alfred; Harvey, A. McGehee; Ford, Frank R., and Lilienthal, Joseph L., Jr.: The Treatment of Myasthenia Gravis by Removal of the Thymus Glands, J. A. M. A. **117**: 1529 (Nov. 1) 1941.
4. Harvey, A. M.; Lilienthal, J. L., Jr., and Talbot, S. A.: Observations on the Nature of Myasthenia Gravis: The Effect of Thymectomy on Neuromuscular Transmission, J. Clin. Investigation **21**: 579 (Sept.) 1942.
5. Wilson, Andrew, and Stoner, H. Berrington: Myasthenia Gravis: A Consideration of Its Causation in a Study of 14 Cases, Quart. J. Med. **13**: 1 (Jan.) 1944.

## METABOLIC DESTRUCTION OF MOTOR END PLATES

During postmortem rigidity a rapid disappearance of motor end plates occurs in human skeletal muscle, associated with a considerable local increase in hydrogen ion concentration. This increase is due mainly to a local accumulation of lactic acid, which usually reaches a concentration of from 0.05 to 0.3 per cent[1] in rigor mortis. The possible causal relationship between locally increased acidity and end plate degeneration was tested by Carey[2] of the Department of Anatomy, Marquette University, who studied the morphologic effects of intramuscular injections of lactic acid in white rats.

Under pentobarbital sodium anesthesia the right sternomastoid muscle was removed as a control and run through the gold technic[3] and other histologic methods. Following this removal 0.1 cc. of 0.05 to 0.3 per cent lactic acid in isotonic solution of sodium chloride was injected into the opposite sternomastoid muscle. The injected muscle was removed for microscopic study from thirty seconds to twenty-five minutes later. Comparison of the two excised muscles revealed that there was a retraction of many of the end plates within thirty seconds after the acid injection, with a considerably increased staining reaction for gold, accompanied by a considerable dilatation of the epilemmal axons. This was soon followed by an abnormal expansion and decreased staining reaction of the end plates, with beginning fragmentation of the hypolemmal axons. By the end of twenty-five minutes many or, at times, practically all of the end plates and epilemmal axons had disappeared, the rate depending on the lactic acid concentration. In many muscle fibers there were clear oval spaces of liquefaction at the previous sites of the end plates. Electrical stimulation of the spinal accessory nerve showed that within thirty seconds the muscle was completely paralyzed by 0.05 per cent lactic acid.

The results of this study confirm the previous belief that acid metabolites which accumulate during rigor mortis are responsible for the local destruction of motor end plates. Carey is of the opinion that as a result of excessive or prolonged muscular activity a similar metabolic destruction of end plates may take place during life. This hypothesis offers a plausible explanation for the rapid destruction of motor end plates in experimental poliomyelitis in monkeys[4] and suggests

1. Fletcher, W. M., and Hopkins, F. G.: J. Physiol. **35**: 247, 1906-1907.
2. Carey, E. J., and Massopust, L.: Proc. Soc. Exper. Biol. & Med. **55**: 194 (March) 1944.
3. Carey, E. J.: Am. J. Path. **18**: 237, 1942.
4. Carey, E. J.: Proc. Soc. Exper. Biol. & Med. **53**: 3, 1943.

new therapeutic methods. As early as 1851 it was shown by Brown-Séquard [5] that intravascular injection of alkaline solutions removes rigor in animals and reestablishes muscle irritability.

## Current Comment

### THE G. I. BILL OF RIGHTS

The broad objective of the Servicemen's Readjustment Act of 1944 is the integration of veterans of the present war into civilian life in the most prompt and adequate manner. Elsewhere in this issue (page 796) is an analysis of the new act, prepared by the Bureau of Legal Medicine and Legislation. Certain provisions of the act are of special interest to physicians in service, especially to the younger physicians. These younger physicians will return to civilian life faced with the necessity of establishing for the first time a civilian practice or of reestablishing a practice pursued only a short time before entry into service. Refresher courses will be made available under the title dealing with education, extending over a period of one year, with maintenance allowances. Machinery is set up whereby the Veterans' Administration will guarantee loans made to veterans for specified purposes, including the purchase of supplies and equipment to be used in a gainful occupation. A third title, in providing for adjustment allowances for unemployed veterans generally, will make available a similar benefit for veterans self employed for profit in an independent business or profession whose income during the preceding calendar month from that business or profession was less than $100. The program authorized by this act will be a costly one to the nation but, as expressed by the Senate Committee on Finance, "The men and women who compose our armed forces and who will compose our armed forces before the end of the war not only now hold the destiny of this republic firmly in their hands, they will so hold it for a generation to come. To the extent to which these men and women can be speedily reintegrated into the civilian population, the consummation of all of our hopes and prayers for national security and advancement depend."

### THERAPY OF SHOCK

The restoration of blood volume by administration of whole blood or blood substitutes has revolutionized the treatment of shock. As a result, many have overlooked that the reduced blood volume and the circulatory disturbances are easily followed by metabolic disorders which may be as important as the circulatory collapse itself. Govier and Greer [1] showed that the correction of the defective breakdown of glucose in the periphery by administration of thiamine prolongs significantly the survival time of dogs subjected to hemorrhagic shock and that a high thiamine intake increases the resistance of the animals against shock. More recently Soskin and his group [2] have emphasized the importance in the treatment of shock of replenishing the cells with easily oxidizable substrates and of controlling acidosis. Irreversible hemorrhagic shock was produced by slow blood withdrawal in which 75 per cent of the dogs died in spite of being reinjected with all the blood that had been withdrawn. The correction of acidosis by addition of sodium bicarbonate to the whole blood reinjected reduced the death rate to 50 per cent. Combinations of the sodium ion and any easily oxidizable substrate such as glucose, lactate or succinate to the whole blood reinjected reduced the mortality rate of so-called irreversible shock to figures as low as 25 per cent. These studies demonstrate that the circulatory collapse is only a partial feature in the complex mechanism of shock. Hence its correction does not constitute more than a partial therapy of shock and one which is ineffective in the irreversible stage. To prevent the development of irreversible shock or to treat advanced shock adequately, consideration must be given to the secondary tissue damage as well as to the primary circulatory condition.

### DISRUPTION OF HOMES BY DEATH OF PARENT

In excess of 500,000 families in this country are broken each year as a result of the death of husband or wife. According to the Statistical Bulletin of the Metropolitan Life Insurance Company,[1] more than 200,000 of the widows and widowers thus created have left in their care a total of almost a half million dependent children under the age of 18. In 1940, for example, approximately 360,000 wives became widowed by the death of their husbands. About one fourth of these women were under 45 years of age and another fourth fell in the age range from 45 to 54. Almost two fifths of these new widows of 1940 had children under 18 left in their charge; to practically half of the widows who were under 45 years of age there was left the task of caring for more than 150,000 children. In innumerable cases the widows with young dependent children were faced with serious hardships, principally of economic nature. Many undoubtedly had to seek employment and at the same time keep up a home for their children. Some solved their economic problem by remarriage, but the possibilities of this are reduced by the presence of dependent children. The problem of adjustment following the death of the marital partner is not so difficult for men as for women; the widower usually suffers no loss of income to provide for himself and his motherless children. Furthermore, the widower with dependent children is usually strongly inclined toward remarriage, and the obstacles to this are generally not as formidable as those facing the widow with young children. The disruption of homes containing young children by death of either parent represents not only a difficult problem but one which can never be entirely solved.

5. Brown-Séquard, E.: Compt. rend. Soc. de biol., Arch. de physiol. **3**: 147, 1851; **21**: 675, 726, 1889.

1. Govier, W. M., and Greer, C. M.: Studies on Shock Induced by Hemorrhage: I. Effect of Thiamine on Survival Time, J. Pharmacol. & Exper. Therap. **72**: 317 (Aug.) 1941.

2. Levine, R.; Huddlestun, B.; Persky, H., and Soskin, S.: The Successful Treatment of So-Called Irreversible Shock by Whole Blood Supplemented with Sodium Bicarbonate and Glucose, Am. J. Physiol. **141**: 209 (April) 1944.

1. Our Annual Toll of Widows and Orphans, Statistical Bull. Metropolitan Life Insurance Company **25**: 3 (May) 1944.

# MEDICINE AND THE WAR

## ARMY

### THE MAYO GENERAL HOSPITAL

The Mayo General Hospital at Galesburg, Ill., was formally dedicated July 10, at which time the following program was presented:

Band Concert.....Camp Ellis Band
God Bless America.....Camp Ellis Band
Accompanied by Post Choir and Audience
Invocation.....Catholic Chaplain, Galesburg
Presentation of Building.....Colonel Montgomery
Acceptance.....Colonel Krafft
Brothers Mayo, Army Experience
Brig. Gen. Fred W. Rankin, Chief Consulting Surgeon, U. S. Army
War Department Policy in Care of Sick and Wounded
Major Gen. H. S. Aurand, Commanding 6th Service Command
History of Mayo Brothers
Dr. Donald C. Balfour, Mayo Clinic, Rochester, Minn.
Benediction.....Post Chaplain
National Anthem.....Camp Ellis Band
Post Choir and Audience

The hospital was named in honor of Drs. William and Charles Mayo and is a tribute to their contribution to the medical service in the first world war. It is constructed on a 155 acre site at the north limits of Galesburg and has seventy-seven buildings of red brick, all except eight of them of one story. A forty-five room administration building and nurses' and officers' quarters are two stories high. It has approximately 1,650 beds. The hospital has its own post office, telephone and telegraph office, post exchange store and lunchroom, laundry, gymnasium, recreation halls and medical and quartermaster warehouses. The hospital was officially opened February 1 and is now treating American soldiers brought back from war zones and those injured in training throughout the country.

The medical officers at present on duty are:

Col. Henry L. Krafft, commanding
Col. Emery B. Neff
Lieut. Col. Ford K. Hick
Lieut. Col. Jasper N. Knox
Lieut. Col. Philip Lewin
Major Howard W. Berg
Major Casper M. Epstein
Major Ralph H. Fouser
Major Edward A. Gall
Major Richard E. Kinzer
Major Emanuel Krimsky
Major Paul R. McConnell
Major Edwin O. Niver
Major Martin Patmos
Major Elkin L. Rippy
Capt. John J. Andrina
Capt. Howard G. Billman
Capt. Manuel G. Bloom
Capt. Harold W. Christy
Capt. Millard Jeffrey
Capt. John H. Johnston
Capt. Willard Z. Kerman
Capt. Francis C. Lane
Capt. Albert E. J. Lohmann
Capt. John C. Mason
Capt. Stuart W. Russell
Capt. George E. Sanders
Capt. Charles M. Schroeder
Capt. Albert O. Singleton
Capt. Max E. Welber
Capt. Norman T. Welford
Capt. Harold J. Werbel
1st Lieut. John A. Aita
1st Lieut. Daniel H. Barenbaum
1st Lieut. Eustace G. Hester
1st Lieut. Robert E. Lartz
1st Lieut. A. G. Richard Perlini
1st Lieut. Erich H. Russow
1st Lieut. Archer J. Sokol
1st Lieut. Joseph J. Speranza
1st Lieut. Robert G. Swanson
1st Lieut. Harry Taylor
1st Lieut. John B. Westfall

### MEDICAL CARE OF AMERICAN WOUNDED IN FRANCE

Major Gen. A. W. Kenner, U. S. Army, chief medical officer, Supreme Headquarters, Allied Expeditionary Force, recently reported on the high standard and the great effectiveness of the medical care given to American soldiers wounded in France after visits to general hospitals in England, where they had arrived a few days after becoming casualties. Among 561 wounded, comprising two groups visited, not a single death had occurred. Most of them were wounded on D Day. General Kenner's visit was made on June 17, eleven days after D Day, as part of an inspection tour of general hospitals which had received evacuated casualties. Of the 561 men, 311 had gone to one hospital, 250 to another. Of the 311 patients received at the general hospital in England on the fourth day after D Day about half were ambulatory, and many already had been released from the hospital. Only two of the cases were in serious condition on arrival. Sulfonamide or penicillin treatment has been continued in all cases indicated. The 250 battle casualties at the other hospital had arrived seven days after D Day. None were in shock, and all were reported as making satisfactory progress. None were psychoneurotic.

From reports of medical personnel at these installations and from personal talks with many patients, General Kenner stated that almost without exception the morale of the wounded was exceedingly high. Great admiration was expressed for the medical service given on the beaches, LST, hospital carriers and ambulance trains.

### THE GARDINER GENERAL HOSPITAL

The Gardiner General Hospital in Chicago, the first army hospital to be named after a nurse, was formally dedicated July 9. A feature of the program was the presentation of a portrait of Lieut. Ruth M. Gardiner, after whom the hospital was named. Lieutenant Gardiner was killed in Alaska in July 1943 in an airplane crash while evacuating wounded soldiers.

The hospital was opened in December 1942 and has a bed capacity of 1,250. It is being used as a military hospital for the Army Air Force's Technical Training Command. Col. John R. Hall is commanding officer. Col. Florence A. Blanchfield, superintendent of the Army Nurse Corps, and Brig. Gen. Fred W. Rankin were present at the dedication.

Lieutenant Gardiner graduated with the second class of flight nurses from the School of Air Evacuation, Bowman Field, Ky., on Feb. 18, 1943 and left there for evacuation duty with the Eleventh Air Force in Alaska on April 22. She was the first army flight nurse to be killed in World War II.

### U. S. HOSPITAL DEDICATED

The new 600 bed Staten Island Area Hospital overlooking Raritan Bay at New Dorp, S. I., which was recently dedicated, will be used to receive American soldiers wounded in the invasion of Europe, according to a recent announcement made by Major Gen. A. T. Terry, commanding general of the Second Service Command. The hospital will primarily serve soldiers and Wacs stationed in the Staten Island area and members of their families. The hospital comprises forty-seven buildings, including eleven connected one story wards, a post exchange, three operating rooms and six wards in the main building.

### ARMY AWARDS AND COMMENDATIONS

#### Brig. Gen. Malcolm C. Grow

The War Department recently announced the award of the Distinguished Service Medal to Brig. Gen. Malcolm C. Grow. The following citation accompanied the award: "As surgeon for the Eighth Air Force from May 1942 to January 1944 he was assigned to duty, and without benefit of precedent he conceived, promptly initiated and aggressively carried out a new medical plan for the conservation of fighting strength of combat crews. Through extensive study and research of conditions affecting the health and efficiency of aircrews at high altitudes, he developed and placed in operation a device to protect gunners from wind blast; electrically heated clothing, gloves, boats, hand warmers and casualty bags for the wounded; wind and fire resistant face and neck protectors, and a special combat ration for use on long bombing missions. These innovations resulted in a pronounced decrease of frostbite cases and greatly increased the combat efficiency of the flight crews. To reduce loss of manpower from psychiatric failures in combat, his recommendations for a system of passes and leaves for combat crews was instituted, rest homes for their exclusive use established and special training given all medical officers

in the tactical units. As a result, every casualty of this type was returned to duty." Dr. Grow graduated from Jefferson Medical College of Philadelphia in 1909 and entered the service Sept. 6, 1937.

### Colonel Franklin T. Hallam

The Legion of Merit award was recently presented to Col. Franklin T. Hallam "for exceptionally meritorious conduct in the performance of outstanding services as surgeon of a corps in the Solomon Islands from Feb. 28, 1943 to March 31, 1944. At Guadalcanal, where he contributed much to decrease substantially the malaria rate, Colonel Hallam was responsible in a considerable measure for the organization and coordination of joint Army and Navy medical services. Later he was of invaluable assistance to the corps commander in planning and executing the initial evacuation program in connection with combat operations at New Georgia. Through his efforts in this campaign, rest camps were established and so expertly operated that hundreds of patients suffering exhaustion and nervous disorders were rehabilitated and returned to combat units in a minimum of time. Colonel Hallam's services again were distinguished at Bougainville, where he was largely responsible for the efficiency of medical installations and for effective malaria control." Dr. Hallam graduated from Indiana University School of Medicine, Bloomington, in 1925. He was commissioned a first lieutenant in the Indiana National Guard July 27, 1933 and was called to active duty Jan. 17, 1941.

### Lieutenant Colonel Stephen L. Gumport

The Legion of Merit was awarded by the War Department recently to Lieut. Col. Stephen L. Gumport (then captain), Medical Corps, U. S. Army, "for exceptionally meritorious conduct in the performance of outstanding services during the period Jan. 25, 1942 to Jan. 28, 1943." Dr. Gumport graduated from Cornell University Medical College, New York, in 1938 and entered the service July 12, 1941.

## DEFERMENT OF PREMEDICAL AND MEDICAL STUDENTS

*Following are the complete texts of the correspondence between the Honorable A. L. Miller, Member of Congress from the Fourth District, Nebraska, and President Franklin Delano Roosevelt:*

*My dear President:*

I hesitate to bring before your busy office a problem which should be solved by the Director of Selective Service, General Lewis B. Hershey. I refer to General Hershey's order of April 11 which in effect will induct practically all premedical students into the Army by July 1.

I have had several conversations with General Hershey and his staff and it does not seem likely that they are willing to accept the responsibility and order a temporary deferment of men of military age who are now in our colleges as premedical students.

As a physician and surgeon of twenty-five years' experience it is my considered judgment that men now in medical school should be deferred as long as they pass the required grades in college in order that the needs of society in the years to come will be fully met. If no premedical students stay in school it might have a serious effect on the health of this country because of the lack of students graduating four or five years hence. The Army now has absorbed a large number of physicians to the extent that should an epidemic occur it might mean that lives would be lost because there would be a shortage of physicians. There are some four thousand physicians who die each year in the United States.

It seems imperative, Mr. President, that the country take steps to safeguard its future. If the present rule of inducting premedical students stands we will be in imminent danger of undermining the health of this country.

Other countries, including Russia, England and Canada, have recognized the problem and are keeping these premedical students in school. There are only about six thousand premedical students. Surely they would be of more service to the country as trained medical men than serving in the infantry or some other branch of the military. If they are taken from school it may well cripple the vital affairs of science, and the country would lose their medical service. It certainly would not guarantee a safe future for science and for the citizens of the country.

Under the present ruling the draft boards are not permitted to consider a premedical student as exempt from military service.

I am appealing to you and to General Hershey because I feel it is imperative that we not make the blunder of permitting such a drastic regulation to continue in force and thus deprive this country of adequate medical care in the future.

Respectfully yours,
A. L. MILLER, M.C.
Fourth District, Nebraska.

CC: Major General Lewis B. Hershey,
Selective Service Commission,
Washington, D. C.

*The President's reply on July 5 was:*

I have given careful thought to your letter of June 16 in which you asked that I review the Selective Service order which does not permit the deferment of premedical students beyond July 1.

No one is more keenly conscious than I am of the need of maintaining the health of the nation and of making sure that we have an adequate supply of doctors. But in this war the need of the armed forces for young, vigorous men must also be given thorough consideration. The Army and the Navy have presented that need in urgent terms as essential to the winning of the war.

The Inter-Agency Committee on Deferments, which was formed some months ago to advise the Director of Selective Service on deferment of men under 26, gave careful consideration to the case of premedical students. The committee included representatives of all governmental agencies interested in manpower. I am told that this committee recommended that there be no deferment for premedical students who are not in medical school by July 1 of this year.

The committee, I am advised, took into account the fact that none of these premedical students could be of service in the practice of medicine prior to 1948, and that many of them would never practice medicine. The committee also gave attention to the fact that young men who do not come up to the exacting physical standards of the armed forces, as well as young women, are available to become premedical students.

As for the future supply of doctors, we must always bear in mind the ex-servicemen, a considerable number of whom will unquestionably desire to begin the study of medicine. As you know, there are many young men who have served their country in the armed forces and have already been discharged from further service. These men, and the far larger number later to be demobilized, must be given every opportunity in the way of education and training. I am told that the medical colleges are particularly interested in promoting medical education of well qualified ex-servicemen. This plan by the medical colleges in behalf of ex-servicemen has my hearty support.

For these reasons, after thorough consideration, I am unwilling to overrule the recommendation of the Inter-Agency Committee on Deferments in regard to premedical students or to instruct the Director of Selective Service to rescind the ruling that he made when he adopted the committee's recommendation.

I fully appreciate your keen interest in this important subject.

FRANKLIN D. ROOSEVELT.

# MISCELLANEOUS

## ESTABLISHED VETERANS REHABILITATION CENTERS

The Office of War Information recently announced that rehabilitation centers will be established at colleges and universities throughout the United States to provide job counseling and to arrange for vocational training and rehabilitation of disabled veterans of the present war. Brig. Gen. Frank T. Hines, administrator of veterans affairs and administrator of the retraining and reemployment administration of the Office of War Information, stated that arrangements have been completed for the opening of the first of the proposed centers at the College of the City of New York. Additional centers in the various states will be selected from time to time. Eligible veterans who apply for vocational rehabilitation under the Veterans Administration program will have the assistance of the best qualified vocational counselors in the country at no cost to themselves. The Veterans Administration will provide transportation to the centers, which will be near veterans' homes, meals and comfortable quarters at the centers, and medical service at the centers or during subsequent job training periods. Objective aptitude tests will be given the former servicemen to determine their abilities and interests and fit them into the occupations in which they are most likely to succeed. There will also be professional advice on selecting jobs.

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, July 1, page 639)

ILLINOIS

Methodist Hospital of Central Illinois, Peoria. Capacity, 240; admissions, 5,701. Dr. C. S. Woods, Superintendent (intern, October 1).

MICHIGAN

St. Lawrence Hospital, Lansing. Capacity, 230; admissions, 6,897. Sister M. Assisium, Superintendent (interns).

OHIO

Mercy Hospital, Canton. Capacity, 265; admissions, 8,361. Sister M. Euphrasia, Superintendent (interns).

WEST VIRGINIA

Ohio Valley General Hospital, Wheeling. Capacity, 330; admissions, 8,069. Mr. J. S. Turk, Superintendent (2 interns, October 1).

## COMMUNITIES IN NEED OF PHYSICIANS

The U. S. Public Health Service, Washington, D. C., has recently advised that the program authorizing the relocation of physicians and dentists under Public Law 216, which became operative Dec. 23, 1943, has been terminated by Congress, effective June 30, 1944. For those communities which have contributed their share of relocation expense and for which physicians or dentists have been contracted, the arrangement will be carried out according to the terms of the contract, from funds obligated for that purpose. Those communities which have submitted their checks for $300 and for which it has been impossible as yet to locate a physician or dentist will have their monies refunded promptly.

## PRICE OF PENICILLIN

Because of many inquiries regarding the maximum price of penicillin now available to civilian hospitals, the Office of Price Administration stated recently that considerable variation in the maximum price of that material exists at the present time. The OPA pointed out that actual selling prices have declined during the last year as production has become greater. One seller's price to civilian hospitals is $3.15 per hundred thousand Oxford units. Since some sellers are supplying the U. S. government at a price much less than this, the OPA said it is reasonable to expect further reductions in the price to civilian hospitals.

## PUBLIC HEALTH UNDER HITLER

Owing to present circumstances the figure of tuberculosis victims is continuously increasing, according to Vichy Home Service of March 10, 1944 (France). On Dec. 31, 1938 about 300,000 people suffered from the disease. The figure is now estimated at about 500,000, that is, between 10 and 12 per thousand of the total population. French antituberculosis facilities are unfortunately inadequate. There are some 1,000 welfare centers, 33,000 beds in sanatoriums, 16,000 in preventive centers and 12,500 in special hospitals. It is at present impossible to extend these facilities. The spread of the disease and the means available to fight it had led Dr. Grasset to draw up a rational plan. Its main principles are that tuberculosis is a disease which develops rapidly, so that there must be no delay in diagnosis and that patients who no longer require special treatment should not crowd specialized clinics. Surgeries have to examine patients and make a precise diagnosis within eight days. The patient is then taken to a specialized hospital center, where he is kept under observation for a few weeks and sent to the most suitable place of cure. If the disease is not contagious he is sent to a healthy locality, which may be a prevention center or even his own home. Otherwise he is sent to a sanatorium. Incurable and chronic patients, on leaving the sanatorium, are taken to hospitals and curative centers. Clinics may reserve a certain number of beds for patients when there is no danger of their spreading the infection. Patients who have recovered are under observation from special centers, mainly attached to antituberculosis surgeries. Another problem, concerning the resettlement of workers who have recovered, is under consideration and the national company of French railways and the social insurances' national institute of hygiene have already achieved a partial solution.

In the Jan. 1, 1944 *Deutsche Arzteblatt* (Germany), an article on diabetes and the wartime food supply by Dr. H. A. Heinsen, head of the University Clinic Giessen, concludes "To sum up, we can state that on the whole and with relatively few exceptions it has been quite possible to get our sufferers (from diabetes) to adapt themselves to the normal rations without any considerable extra rations. We should try to do this with every diabetic patient at least while the war is on. The question whether after the war, when presumably the consumption of fats and meat of the diabetic too will considerably increase, the very high carbohydrate contents of wartime rationed food are in all cases advisable must for the present remain unanswered."

According to the *Deutsche Arzteblatt* of January 1 (Germany) during the days of the Russian winter there has been a great increase of ecthyma vulgare, which occurs particularly on the calf. It is so frequent that a special name has been given to it. The simultaneous symptoms of a swelling, inflammation and edema, always on the calf, are characteristic of this disease, which has become known as "Russische Unterschenkeleiterung." The presence of lice and the effect of scratching play an important part, and delousing is essential if a permanent cure is to be effected, as otherwise new swellings will constantly occur.

*Völkischer Boebachter*, Vienna edition, February 22 (Germany), states that it is particularly important to supply the doctors with the necessary instruments. In order to be able to direct the production of these instruments more strictly, the Central Committee for Ironware, Tinware and Metalware has issued a new order according to which producers of doctors', dentists' and veterinaries' instruments and implements may manufacture and deliver these articles only if they hold the necessary permits issued by the central committee. No permit is required to carry out repairs to instruments.

An illegal medical publication in France appeals to doctors not to comply with the wish of the German occupying authorities, who desire to send 5,000 French doctors to Germany, according to *Svenska Dagbladet* of February 15.

# ORGANIZATION SECTION

## THE SERVICEMEN'S READJUSTMENT ACT OF 1944

### An Abstract Prepared by the

### Bureau of Legal Medicine and Legislation, American Medical Association, Chicago

The G. I. Bill of Rights (S. 1767) was approved by the President on June 22 as Public Law 346, Seventy-Eighth Congress. It contains six titles.

TITLE I

Title I deals generally with hospitalization, claims and procedures, aid by veterans' organizations and the review of discharges or dismissals from the armed forces.

It declares the Veterans' Administration to be an essential war agency, entitled to priorities second only to the War and Navy departments, such priorities, so far as they relate to materials, being extended to any state institution to be built for the care or hospitalization of veterans.

It authorizes an appropriation of $500,000,000 for the construction of additional hospital facilities for veterans and sanctions agreements between the Administrator of Veterans' Affairs and the Secretaries of War and Navy for the mutual use or exchange of use of hospital facilities.

It provides for the detail of commissioned, appointed or enlisted personnel from the armed forces to the Veterans Administration for periods not extending beyond six months after the termination of the war. It contemplates procedures to assure veterans of an opportunity to file claims for benefits.

It makes available adequate training in the use of prosthetic appliances in a service or a Veterans Administration hospital "or by outpatient treatment, including such service under contract."

It sets up machinery for the review of certain discharges or dismissals from service other than discharges by reason of the sentence of a general court martial.

TITLE II

Title II provides a program for the education of veterans following separation from service.

*Eligibility for Benefits.*—Persons who served in the active military or naval services on or after Sept. 16, 1940 and prior to the end of the war for the prescribed length of time and who shall have been released or discharged under conditions other than dishonorable will be entitled to the benefits of this title.

Veterans must have served ninety days or more or must have been released or discharged from active service by reason of an actual service incurred injury or disability. The ninety days of required service must be in addition to a (*a*) any period in which the person was assigned for a course of educational training under the Army specialized training program or the Navy college training program, which course was a continuation of his civilian course and was pursued to completion; or (*b*) any period served as a cadet or midshipman at one of the service academies.

An otherwise eligible veteran over 25 years of age must show that his education or training was impeded, delayed, interrupted or interfered with by reason of his entrance into service in order to qualify for the additional education or training made available under this title. A veteran 25 years or younger is not required to make any such showing. His education or training is presumed to have been impeded, delayed, interrupted or interfered with.

An otherwise eligible veteran will be entitled too to a "refresher or retraining course" if he so desires.

*Onset and Termination of Courses.*—A course must be initiated not less than two years after either the date of the veteran's discharge or the end of the war, whichever is later. No education or training will be afforded beyond seven years after the end of the war.

*Length of Courses.*—An eligible veteran will be entitled to education or training, or a refresher or retraining course for a period of one year, or the equivalent thereof in continuous part time study, or for such lesser time as may be required for the course of instruction chosen by him.

On completion of the one year course, other than a refresher or retraining course, the veteran will be entitled to an additional course not to exceed the time he was in service after Sept. 16, 1940 and before the end of the war and exclusive of any period he was assigned for a course of education or training under the Army specialized training program or the Navy college training program, which course was a continuation of his civilian course and was pursued to completion, and exclusive of any period he was assigned as a cadet or midshipman at one of the service academies.

The total period of education or training may not exceed four years.

*Educational Institutions.*—The veteran may select any approved institution to attend which will agree to accept or retain him. For reasons satisfactory to the Administrator of Veterans' Affairs, the veteran may change a course of instruction. If the progress of the veteran is unsatisfactory, the Administrator may terminate the course.

A list of approved institutions will be established in the following manner:

(1) The Administrator of Veterans' Affairs will be required from time to time to secure from the appropriate agency of each state a list of educational and training institutions, including industrial establishments, which are qualified and equipped to furnish education or training, including apprenticeship and refresher or retraining courses;

(2) the Administrator will be authorized to add additional institutions to such lists which in his judgment are qualified to participate in the program; and

(3) the institutions designated by the several appropriate state agencies plus the institutions designated by the Administrator himself "shall be deemed qualified and approved to furnish education and training to such persons as shall enroll under this part."

*Educational or Training Institutions Defined.*—The term "educational or training institutions" is defined to include

"all public or private elementary, secondary and other schools furnishing education for adults, business schools and colleges, scientific and technical institutions, colleges, vocational schools, junior colleges, teachers' colleges, normal schools, professional schools, universities and other educational institutions and shall also include business or other establishments providing apprentice or other training on the job, including those under the supervision of an approved college or university or any state department of education, or any state apprenticeship agency or state board of vocational education, or any state apprenticeship council or the Federal Apprentice Training Service established in accordance with Public, Numbered 308, Seventy-Fifth Congress, or any agency in the executive branch of the federal government authorized under other laws to supervise such training."

*Payment to Educational or Training Institutions.*—The administrator will pay to each institution for each veteran enrolled in a course of education or training (1) the customary cost of tuition and (2) such laboratory, library, health, infirmary and other similar fees as are customarily charged.

The Administrator may pay for books, supplies, equipment and other necessary expenses, exclusive of board, lodging, other living expenses and travel, as are generally required for the successful pursuit and completion of courses by other students.

Payments by the Administrator may not exceed, with respect to any veteran, the sum of $500 for "an ordinary school year."

*Maintenance Allowances.*—While enrolled in and pursuing a course, a veteran will be paid a subsistence allowance of $50 a month if without dependents and $75 a month if he has a dependent. Such a person attending a course on a part time basis and a person receiving compensation for productive labor performed as a part of their apprentice or other training on the job at institutions, business or other establishments will be entitled to receive such lesser sums, if any, as subsistence or dependency allowances as may be determined by the Administrator.

*Rehabilitation of Veterans Entitled to Educational Benefits.*—Any veteran entitled to vocational rehabilitation under Public Law 16, Seventy-Eighth Congress, who is also entitled to educational training under the Servicemen's Readjustment Act of 1944, may elect which benefit he desires.

*Federal Control Over Educational Institutions.*—This title provides that:

"No department, agency or officer of the United States, in carrying out the provisions of this part, shall exercise any supervision or control, whatsoever, over any state educational agency, or state apprenticeship agency, or any educational or training institution."

Excepted from the foregoing proscription are federal educational and training institutions over which federal jurisdiction is authorized by existing law.

*Utilization of Existing State and Federal Facilities and Services.*—The Administrator of Veterans' Affairs will be authorized to administer title II and must, so far as he finds it practicable, utilize existing facilities and services of federal and state departments and agencies on the basis of mutual agreements with them. He may promulgate rules and regulations necessary to carry out the purposes of the title.

*Vocational Guidance for Beneficiaries.*—The Administrator may arrange for the educational and vocational guidance of beneficiaries undergoing courses under this title. He may make available information as to the need for general education and for trained personnel in the various crafts, trades and professions, utilizing information, to the extent practicable collected by other federal agencies.

*Medical and Hospital Care for Beneficiaries.*—The appropriations made available to the Veterans Administration for the medical treatment and hospitalization of veterans generally are made available for persons undergoing courses under the title.

*Books, Supplies and Equipment.*—Any books, supplies or equipment furnished a veteran will be considered as having been released to him. If because of fault on his part a veteran fails to complete his course he may be required to return any books, supplies or equipment not actually expended or to pay the reasonable value thereof.

TITLE III

Title III relates to loans for the purchase or construction of homes, farms and business property. It sets up machinery whereby the Veterans Administration will guarantee loans made to veterans, provided the loans are to be expended for specified purposes. Those purposes are:

(1) The purchase, construction, alteration, repair or improvement of property to be occupied by the veteran as his home, or the payment of delinquent indebtedness, taxes or special assessments on residential property owned by the veteran and used by him as a home;

(2) the purchase of land, buildings, livestock, equipment, machinery, or implements, or the repair, alteration or improvement of any buildings or equipment, to be used in farming operations conducted by the veterans; and

(3) the purchase of any business, land, buildings, supplies, equipment, machinery, or tools to be used by the applicant in a gainful occupation, other than farming.

The aggregate amount guaranteed by the Veterans Administration may not exceed $2,000 in a particular case nor 50 per cent of the loan negotiated for the purposes indicated. Provision is made for the guaranteeing of a second loan under specified conditions.

Application for the guaranty of a loan must be made within two years of separation from service or within two years of the termination of the war, whichever is later, but may not be filed later than five years after the war.

Interest for the first year on the guaranteed part of the loan will be paid by the Veterans Administration, and thereafter the interest on the guaranteed part of the loan may not exceed 4 per cent. The guaranteed part of the loan is to be repayable in twenty years.

TITLE IV

Title IV contemplates a job counseling and employment placement service for veterans to be operated under the United States Employment Service with the cooperation and assistance of the Veterans' Placement Service Board, to consist of the Administrator of Veterans' Affairs as chairman, the director of the National Selective Service System, and the administrator of the Federal Security Agency. This board will determine all matters of policy relating to the administration of the Veterans' Employment Service of the United States Employment Service.

It is contemplated that the United States Employment Service will assign to each state a veterans' employment representative who, in cooperation with the public employment service staff in the state, will be functionally responsible for the supervision of the procedures undertaken to effect the employment of veterans.

TITLE V

Title V provides readjustment allowances for former members of the armed forces who are unemployed.

Readjustment allowances will be paid, subject to the conditions set forth in detail in the title, for each week of unemployment, not to exceed a total of fifty-two weeks, which (1) begins after the first Sunday of the third calendar month after June 22, 1944 and (2) occurs not later than two years after separation from the service or the end of the war, whichever is the later date. No allowances will be paid for any week commencing more than five years after the end of the war.

The number of weeks of allowances to which a veteran will be entitled, subject to the fifty-two week limit, will be determined by the length of service of the veteran.

The allowance payable will be $20 a week less that part of the wages paid to the veteran for such week in excess of $3.

To be eligible for readjustment allowances, a veteran must (*a*) reside in the United States, (*b*) be completely unemployed or, if partially unemployed, must not have received wages in excess of $23 a week, (*c*) be registered with and reporting to a public employment office and (*d*) be able to work and available for suitable work, but no veteran will be considered ineligible in any period of continuous unemployment because of inability to show that he is able to work and available for suitable work if such failure is due to an illness or disability which occurs after the commencement of such period.

An otherwise eligible veteran who is self employed for profit in an independent establishment, trade, business, profession or other vocation will be eligible for readjustment allowances if he has been fully engaged in such self employment and if his net earnings have been less than $100 in the previous calendar month. Such a veteran will be entitled to receive the difference between $100 and his net earnings for such month, subject to the $20 a week limitation and the time limit applicable to unemployed veterans generally.

TITLE VI

Title VI contains general administrative and penal provisions.

## WASHINGTON LETTER

*(From a Special Correspondent)*

July 10, 1944.

### The Public Health Service Act

An attack on the tuberculosis problem on a national scale is provided for in the Public Health Service Act (signed by the President on July 3). The act streamlines the administration of the Public Health Service, bringing together in compact and orderly arrangement substantially all existing laws affecting the service, eliminating many outmoded laws and effecting revisions dictated by operating experiences. Its new provisions include authority to make grants-in-aid to research institutions for any disease, just as the National Cancer Act of 1937 provides for cancer research; expansion of the federal-state cooperative public health programs, and establishment of a national tuberculosis control program patterned after the venereal disease control program.

The provisions of the bill for investigation and control of tuberculosis are understood to be incorporated in the Public Health Service Act.

The new law retains all the important duties of the Public Health Service which have been granted to it by Congress in legislation enacted in the past fifty years, such as medical and hospital care of American Merchant Marine seamen, the United States Coast Guard and other federal beneficiaries, the National Quarantine Service, scientific research, control of biologic products, care of leprous patients and narcotic drug addicts and assistance to the state and territorial health departments. The purpose of the tuberculosis control bill was to enable the Surgeon General of the Public Health Service to seek more effective measures of prevention, treatment and control of tuberculosis, to assist states, counties, health districts and other political units of states in establishing and maintaining such measures and to control the spread of tuberculosis in interstate traffic.

The Public Health Service Act of 1944 as approved by the House and Senate makes it possible to extend a direct attack on tuberculosis. The act authorizes the establishment of a tuberculosis control program in the Public Health Service with the responsibility of administering grants-in-aid to the state health departments, and of conducting demonstrations and research leading to eradication of the disease. The act raises the ceiling of federal appropriations for grants-in-aid to the states under title VI of the Social Security Act from $11,000,000 to $20,000,000 annually. It is explained in Washington that the Public Health Service will now be able to recruit and commission in the regular corps younger officers who otherwise would serve as interns in the marine hospitals. The act also permits commissioning of qualified personnel in professions other than medicine, dentistry and engineering—specialists in such fields as entomology, chemistry and zoology.

Under provisions of the new law, the Nursing Corps of the Public Health Service may be commissioned just as the nurses of the Army and Navy are commissioned. The nurses not only staff the hospitals, dispensaries and treatment centers operated by the Public Health Service but also act as public health nursing consultants to state health departments and administer the nurse education program. Other sections of the new law will give to commissioned personnel of the Public Health Service in wartime substantially the same benefits and privileges as are provided for officers of the Army and Navy. The service now includes four major administrative units in its organization. They are the Office of the Surgeon General, the National Institute of Health (Bureau of Scientific Research), the Bureau of State Services and the Bureau of Medical Services. The staff of the Surgeon General now includes a deputy surgeon general and three assistant surgeons general in charge of the three bureaus. In addition, staff officers with the rank of Assistant Surgeon General are assigned to the administration of dental and sanitary and engineering activities respectively. The medical director of the United States Coast Guard has the rank of Assistant Surgeon General on the staff of the Surgeon General.

The Public Health Service was established in 1898 as an agency to provide medical and hospital care for members of the American Merchant Marine. It is one of the oldest of federal agencies and has been a constituent of the Federal Security Agency since 1939. The service was 68 years old when Pasteur demonstrated germ causation of disease. It was the first federal agency authorized to undertake scientific research on diseases of mankind and conditions propagating their spread. Acts of Congress in 1878, 1890, 1893 and 1906 gave it authority to prevent introduction of epidemic diseases into this country from abroad and to prevent the interstate spread of communicable diseases. Fundamental reorganization laws expanding the functions and strengthening the administration of the service have been enacted several times. In 1889 it was organized along military lines, when provision was made for establishment of a corps of commissioned officers with grades, ranks and rates of pay like those of the medical corps of the U. S. Army and Navy. In 1902 the service was given responsibility for the control of biologic products (vaccines, serums, toxoids and the like). This law required that the service establish standards for their manufacture and that manufacturers be licensed by the service for the sale of biologic preparations in interstate commerce.

Scientific research has developed from a small laboratory to a major bureau, the National Institute of Health, which occupies modern laboratories in Bethesda, Md. Authorized by Congress in 1930 to extend research activities to any disease or condition affecting the people, the institute conducts investigations on infectious diseases, cancer, zoology, physiology and industrial toxicology. The National Cancer Institute, established by Congress in 1937, is a major division of the National Institute of Health.

From earliest days, the Public Health Service has cooperated with state and local health agencies and with voluntary organizations. In 1935 title VI of the Social Security Act placed administration of the federal-state cooperative public health program in the Public Health Service. This involves the allotment of grants-in-aid to state health departments, the provision of consultant services and technical assistance to the states.

### Tuberculosis Division

The establishment of a tuberculosis control division in the Public Health Service was announced on July 10 by Surg. Gen. Thomas Parran. Dr. Herman E. Hilleboe, in charge of the Public Health Service tuberculosis control activities since 1942, was named chief. The tuberculosis division will be within the Public Health Service Bureau of State Services, headed by Dr. L. R. Thompson. Dr. Parran's order was approved by Paul McNutt, Federal Security Administrator.

The functions of the new division will be (1) developing and effecting means for the prevention, treatment and control of tuberculosis; (2) assisting states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate measures for the prevention, treatment and control of such diseases; (3) preventing and controlling the spread of tuberculosis in interstate traffic and any other activities with respect to the prevention, treatment and control of tuberculosis which may be authorized to be performed by the Public Health Service.

The sum of $10,000,000 was authorized in the act of 1944 for this new work and will be available as soon as funds are appropriated.

Dr. Hilleboe was born in West Hope, N. D., in 1906 and was educated at the University of Minnesota Medical School, where he received the B.S. and M.D. degrees, and at the Johns Hopkins School of Hygiene and Public Health, where he received a Master of Public Health degree. He is a member of a number of local, state and national societies and health organizations, including the National Tuberculosis Association, on whose board of directors and Medical Research Council he serves. He entered the Public Health Service as a passed assistant surgeon in the regular commissioned corps in 1931, and he made special studies of tuberculosis control in the Public Health Service and Scandinavian countries, France and England in 1939. When he returned from England he was made chief of the medical unit of the Minnesota Division of Social Hygiene. He served there till 1942, when he was appointed medical officer in charge of the Public Health Service tuberculosis control section of the state relations division. He was promoted to the rank of senior surgeon in 1943.

# MEDICAL ECONOMIC ABSTRACTS

## OREGON PHYSICIANS' SERVICE

Medical care on the job is the responsibility of the employer under the State Industrial Accident Commission. Recently this responsibility has been extended to cover occupational disease. Originally this care was furnished largely by individual plant systems or by entering into a medical contract. For some years a high percentage of such contracts has been with medical societies, principally with the Oregon Physicians' Service.

The Oregon Physicians' Service was incorporated as an Oregon corporation on Dec. 6, 1941, although no business was transacted until June 1942. At the time of incorporation a number of local medical service bureaus had been established by groups in different parts of the state and with the approval of the various medical societies. There was no existing organization, however, to take care of prepaid medical contracts covering migratory workers or groups in sections of the state lying between the local bureaus, and the first function of the Oregon Physicians' Service was to fill these gaps in coverage wherever asked to do so. Many of the local bureaus have since merged with the Oregon Physicians' Service.

The original capital was provided by the Oregon State Medical Society, which, under a trust agreement, purchased the entire issue of Oregon Physicians' Service voting stock and placed it in the hands of eleven trustees named by the council.

In general, the type of medical and hospital contract written by the Oregon Physicians' Service conforms to the usual hospital association contract that has been written in Oregon for several years to cover off the job illness. It is a contract entered into with the employer, who acts on behalf of and with the consent of the employee. The principal services offered are medical and surgical care, hospital care, special nursing, x-ray and physical therapy, ambulance and limited dental care. No prescriptions are provided. Limitations are placed on the care of certain types of cases; also a maximum of one year on medical care and six months of hospital care on any 1 case. This standard type of contract is offered to employed persons only at the rate of $2.50 per month. Approximately 17,600 persons were under such contracts on June 30, 1943.

Special contracts have been written with the two Kaiser shipyards in Oregon, which provide that the Oregon Physicians' Service shall cover medical costs only. Hospitalization of the shipyard employees is provided by the Blue Cross plan. The total premium for this coverage is 60 cents per week, of which the Oregon Physicians' Service receives 45 cents for the medical coverage; 43,100 workers were under the "M & H plan" on June 30, 1943.

The Oregon Physicians' Service also entered into an agreement with the Farm Security Administration to provide medical and hospital care to families eligible for standard loans under its settlement program in the Snake River area of eastern Oregon. This coverage was first written for an annual rate of $40 per family, but this was increased to a $50 rate in 1943 to provide sufficient funds to warrant continued participation by the Oregon Physicians' Service staff members. The limited experience had with this type of coverage is inconclusive, but without some selection of risks it is evident that a broad medical and hospital coverage for families will be rather unsatisfactory to the physicians for at least the first year. These families were unable to pay for their medical care as private patients prior to their coming under the Farm Security Administration program (many of them had come from areas of extreme underprivilege) and hence there was an unusual amount of needed medical service, often involving surgery, that required attention whenever later sickness arose in these people. It is anticipated that the coming year will produce improved returns to the participating physicians.

The total number of persons under coverage by the Oregon Physicians' Service at the end of June 1943 was approximately 83,000, with an additional 22,000 covered by its affiliates, making a total of about 105,000 under coverage directly supervised by organized medicine out of a total prepaid coverage in the state estimated to be some 150,000 people.

The physicians on the staff of the Oregon Physicians' Service number 678 in active civilian practice; an additional 173 are in military service. This total of 678 represents 95 per cent of the active membership of the Oregon State Medical Society and 85 per cent of all licensed medical practitioners in Oregon. The only requirement for admission to the Oregon Physicians' Service staff is that the physician be a member of the state medical society or eligible therefor.

Wherever an approved medical service bureau is already in operation and wishes to preserve its separate entity, the Oregon Physicians' Service endeavors to assist it in any feasible manner, and a genuine and friendly cooperation has been built up between such bureaus and the Oregon Physicians' Service.

The component local societies largely govern the activities of the Oregon Physicians' Service in their respective districts through their own supervisory committees. If desired, each district may establish a separate "pool," so that the Oregon Physicians' Service contracts written in that district will inure to the benefit of the staff physicians in that area; six such pools were in operation on June 30. Those districts not choosing to localize their Oregon Physicians' Service contract practice have been grouped together in a "statewide" pool.

The Oregon Physicians' Service does not enter any county until prior authorization has been received from that county society. All but one of the counties of Oregon (other than the five previously named which have independent approved organizations of their own) have requested the Oregon Physicians' Service to enter into contracts with their employed groups, and mergers have been completed or are under way.

The rate of expansion in Oregon Physicians' Service activities is only partially reflected in the income figures. During the twelve months, 489 contracts were acquired either by merger with existing medical service bureaus or by new enrolments. These contracts represented a net increase of 48,800 members, 40,000 of whom were shipyard employees.

Gross earned income for the year was $800,200. Of this amount $576,973 was expended on direct medical and hospital care of patients, $104,595 was expended for first aid service which directly benefited the subscribers and $118,128 was expended for administrative expenses. It is noteworthy that member physicians received 53.2 per cent of income in the form of fees for services, and an additional 5.7 per cent was paid to nonmember physicians handling emergency cases; the medical profession thus received 58.9 per cent of each revenue dollar. Administrative costs amounted to 14.8 per cent of earnings, a relatively low percentage considering that the first year of any business calls for abnormally heavy costs in this category.

The huge influx of war industries in the metropolitan area of Portland has created a number of special problems in the medical field. One such problem is the Vanport City Housing Project, designed to accommodate 40,000 persons. As the majority of the workers living in Vanport are employees of the Kaiser shipyards, the Oregon Physicians' Service was asked to operate the hospital erected there as a part of its function of providing medical care to the Kaiser employees. The hospital was opened on a limited scale on Aug. 1, 1943 and is still unable to admit certain types of cases because of delays in receiving certain necessary equipment. This equipment is on order and is expected to be installed and in use in a few weeks. The hospital can then render adequate service to Vanport City.

The heavy concentration of workers in the Kaiser yards made it necessary to operate fairly elaborate first aid stations in those yards. Over 2,000 persons are treated daily at these first aid stations. The Oregon Physicians' Service employs a staff of 150 at these stations, including thirteen full time salaried physicians. The sizable cost of operating these stations is divided between the Oregon Physicians' Service and the State Industrial Accident Commission in the ratio of treatments rendered for industrial and nonindustrial cases in which reports are made to the stations. Approximately 63 per cent of all cases are industrial injuries; hence the commission bears that proportion of the first aid station costs.

Service Bulletin, Oregon State Medical Society, November 1943.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ALABAMA

**Personal.**—Dr. James W. MacQueen, medical director of the Hillman Hospital, Birmingham, has been appointed in charge of the Hillman and Jefferson hospitals. Dr. MacQueen, who had been superintendent of the Hillman Hospital, was named to the new position when both county hospitals were merged. ——Dr. Elisha M. Moore, Livingston, has been appointed health officer of Autauga County.

## CALIFORNIA

**William Greulich Named Professor of Anatomy.**—William Walter Greulich, who received his doctor of philosophy degree at Stanford University in 1934, has been appointed professor of anatomy there, effective at the start of the summer quarter. Since 1940 Dr. Greulich has been professor of physical anthropology and anatomy and director of the Brush Foundation at Western Reserve University School of Medicine, Cleveland.

**New School of Veterinary Medicine.**—The University of California plans to establish a school of veterinary medicine at Davis. Appropriation of $500,000 has been made by the legislature for the project and, according to *Science*, an additional $500,000 is expected from the postwar building funds provided by the legislature. The department will be set up in the college of agriculture, the faculty to be drawn not only from the department of veterinary science but from other departments, including the department of agriculture and the medical school.

## ILLINOIS

**Portrait of Dr. Carlson.**—A feature of the alumni banquet of Augustana College, Rock Island, was the presentation to the college of a portrait of Dr. Anton J. Carlson, emeritus professor of physiology, University of Chicago School of Medicine. The portrait is the work of Carl Tolpo. Dr. Carlson graduated at Augustana in 1898.

### Chicago

**John Mannix Named to Chicago Plan for Hospital Care.**—John R. Mannix, formerly executive director of Michigan Hospital Service, Detroit, recently became executive director of the Chicago Plan for Hospital Care.

**Dentist Leaves Estate to Blind.**—Charles J. Tibbets, dentist, who died May 23, bequeathed $1,000 of his $25,000 estate to Seeing Eye, Inc., Morristown, N. J., and the remainder to the American Foundation for the Blind, Inc., New York.

**Dr. Routley Delivers Root Lecture.**—The William W. Root lecture of Alpha Omega Alpha was delivered in Chicago, June 15, by Dr. Thomas C. Routley, Toronto, Ont., Canada, on "Newer Phases of Medical Education." At the meeting of the society in February, honorary membership was conferred on Norman T. Kirk, Surgeon General of the Army, Ross T. McIntire, Surgeon General of the Navy, and David N. W. Grant, Air Surgeon.

**Physician Sentenced in Stolen Car Case.**—Dr. Lawrence T. Browning was sentenced to three years in prison June 22 by Federal Judge Luther M. Swygert in South Bend, Ind., newspapers report. When arrested the physician gave his address as 634 South State Street, Chicago. He was said to be arrested on a charge of driving a stolen automobile across the state line. Newspapers reported that agents of the federal bureau of investigation arrested him after he tried to sell stolen medical equipment and charged that he had driven two stolen automobiles across state lines. On June 14 he was placed on probation. Four days later he was arrested again in Valparaiso, Ind. He admitted that he had stolen another car in Chicago. He was sentenced for driving this car to Indiana and for driving another stolen car from South Bend to Niles, Mich.

## KENTUCKY

**Personal.**—Dr. Charles E. Youmans has been appointed medical superintendent of the State Institution for the Feebleminded, Frankfort, to succeed Dr. Lynn D. Adams, resigned. ——Dr. Don E. Wilder, Grayson, recently resigned as health officer of Carter County.

**New Health Center Dedicated.**—A new building housing the city-county health center of Hopkinsville and Christian County was dedicated June 8. The unit was erected with the assistance of $60,000 contributed by the government. Dr. Philip E. Blackerby, Louisville, state health commissioner, gave the principal address. The unit is under the direction of Dr. Robert H. English.

**The Gross Lecture.**—Dr. Geza de Takats, associate professor of surgery, University of Illinois College of Medicine, Chicago, delivered the fifth Samuel D. Gross Lecture at the University of Louisville School of Medicine, May 23, on "The Causalgic State in Peace and War." The lectureship is sponsored annually by the University of Louisville chapter of Phi Delta Epsilon.

## MARYLAND

**New Officers of Medical Board.**—Dr. Edward P. Thomas, Frederick, was on June 6 chosen president of the Board of Medical Examiners of Maryland and Dr. Erasmus H. Kloman, Baltimore, was named vice president. Dr. John T. O'Mara, Baltimore, was reelected secretary-treasurer. Dr. Edward M. Hanrahan Jr., Baltimore, was recently elected a member of the board to succeed Dr. Thomas R. Chambers, Baltimore, whose term expired.

**Personal**—Elmer V. McCollum, Ph.D., professor of biochemistry at the School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, has been elected a foreign member of the Swedish Academy of Sciences. ——Dr. George W. Corner, director of the department of embryology, Carnegie Institution, Baltimore, was awarded the honorary degree of doctor of science during the recent commencement of the University of Rochester, N. Y.

**Physician to Hold New Welfare Position.**—On April 14 the board of estimates approved the establishment in the Baltimore Department of Welfare of a new position of assistant director of welfare for medical care. *Baltimore Health News* reports that a qualified physician will be selected for the position, subject to the regulations of the city service commission. After his appointment he will be designated, for liaison purposes, deputy commissioner of health in the city health department.

## MASSACHUSETTS

**Fellowships in Clinical Nutrition.**—The Nutrition Foundation has awarded grants to Harvard Medical School, Boston, to support fellowships in clinical nutrition, effective through the years 1944, 1945 and 1946. The fund will be administered under the supervision of Dr. Fredrick J. Stare, assistant professor of biochemistry and nutrition. Two types of training are provided for by the fellowship fund: postdoctorate training in medicine and advanced training in medical nutrition for dietitians.

**Alumni Activities at Boston University.**—On April 30 the Alumni Association of Boston University School of Medicine brought out the first copy of a bulletin designed for alumni members in service. The publication was financed by the alumni association and will be issued once a year. At the annual meeting of the association on May 15 Dr. Eleanor B. Ferguson-Howard, Boston, who graduated in 1920, was chosen president, the first time in the history of the medical school that a woman has been elected to the office. She succeeds Dr. Clifton B. Leech, Providence, R. I. Other officers include Drs. Leon W. Crockett, Boston, and Roger M. Burgoyne, Winchester, vice presidents; Dr. Frank E. Barton, Newton, secretary, and Dr. Kenneth Christophe, Needham, treasurer.

## MICHIGAN

**Clifford Young Dies.**—Clifford C. Young, D.P.H., Lansing, director of laboratories of the Michigan Department of Health since 1918, died June 5.

**Ninety-Three Years of Age.**—Dr. Homer P. Mix, Riverside, who was born in 1851 and who has practiced medicine for sixty-five years, is still practicing medicine and is considered the oldest practicing physician in the state. According to the *News-Palladium*, Dr. Mix, known as the "Old Timer," delivered a 12 pound daughter to a local family, June 20.

**Property Available for Cancer Laboratory.**—The Detroit Institute of Cancer Research has purchased from the Detroit Edison Company the Detroit Edison Club property at the northeast corner of St. Antoine and Frederick streets. It will remodel the two buildings there as a temporary cancer research laboratory and will make the grounds available as a playground for children of the neighborhood, it was announced June 25. The site was chosen because it is on that of the proposed Medical Science Center of Wayne University, with which the institute

hopes to cooperate closely in cancer research. Eventually the buildings will be replaced with new structures. Dr. Rollin H. Stevens, Detroit, is president of the institute, which was established in November 1941.

## MISSISSIPPI

**New Officers of Hospital Association.**—Dr. William H. Brandon, Clarksdale, was elected president of the Mississippi State Hospital Association at its annual meeting in Jackson in May, succeeding Dr. George E. Adkins, Jackson. Other officers include Dr. Henry Boswell, Sanatorium, vice president, and Miss Grace Golden, Vicksburg, secretary-treasurer. The society voted to hold its next annual meeting separate from the state medical association.

**State Board Commended for Care of Public Health.**—The Jefferson Davis County Committee of One Hundred, composed of civic minded Negro citizens of the county, recently paid tribute to the Mississippi State Board of Health and its director, Dr. Felix J. Underwood, Jackson, for the effective health program carried on for the benefit of all people. The letter acknowledging the tribute was sent to Dr. Underwood by A. L. Johnson for the Jefferson Davis County Committee. Mr. Johnson stated that his organization was "especially proud of the local staff because its members are thoroughbreds without exception, competent, efficient, devoted to duty and possessed with a keen appreciation of human personality." This agency, he said, is an endorsement of the American way of life and points the way for future action. The Committee of One Hundred is an organization for the general improvement of the conditions of the colored people in Mississippi.

## NEW HAMPSHIRE

**Dr. Frechette Returns as State Health Officer.**—Alfred L. Frechette, surgeon, U. S. Public Health Service, who recently returned from Africa, was expected to resume his activities as state health officer July 1, according to the *New Hampshire Health News*.

## NEW JERSEY

**Dr. Arthur Richardson Joins Squibb Institute.**—Dr. Arthur P. Richardson, professor and head of the department of pharmacology, University of Tennessee College of Medicine, Memphis, has been appointed head of the division of pharmacology of the Squibb Institute for Medical Research, New Brunswick, effective October 1. Dr. Richardson will succeed Dr. Harry B. Van Dyke, who has accepted an appointment as head of the department of pharmacology at Columbia University College of Physicians and Surgeons. Dr. Richardson graduated at Stanford University School of Medicine, San Francisco, in 1937. He subsequently served on the staff of Stanford, as fellow for the National Research Council at Johns Hopkins University and as a member of the faculty of the University of Tennessee College of Medicine.

**Fined for Advertising Tuberculosis Cure.**—Emile Carpentier, Hillsdale, has been penalized $15,000 for violating the Federal Trade Commission order directing him to discontinue advertising a preparation as a cure for tuberculosis, the New York *Times* reported June 15. It was stated that the judgment was the largest ever ordered in a civil penalty suit brought by the department of justice for violation of the federal trade commission cease and desist order. According to the report, in February 1938 the commission directed Carpentier to discontinue representing that a product sold as "T. B. Compound" had therapeutic or remedial value. Three counts alleging separate violations of the order were filed in the U. S. District Court in Trenton and a maximum penalty of $5,000 was imposed on each count. It was stated that Carpentier traded under the name of "Mrs. E. Carpentier."

**Dr. Barkhorn Receives Ill Award.**—On May 18 the Academy of Medicine of Northern New Jersey presented its Edward J. Ill Award to Dr. Henry C. Barkhorn for his many services to the academy. The citation accompanying the award identifies Dr. Barkhorn as a "man of wisdom and understanding, talented surgeon, eminent citizen." Dr. Barkhorn served as treasurer of the academy from 1922 to 1935. Since then he has been vice president, president, chairman of the public health and education committee and since 1942 chairman of the board of trustees. He was president of the Essex County Medical Society in 1930 and has been active in the functions of the state medical society, serving fourteen years as chairman of its publication committee. During the absence in service of the editor of the state medical journal Dr. Barkhorn has edited it in addition to the *Bulletin* of the Essex County Medical Society.

## NEW YORK

**Physician Observes Ninety-Third Birthday.**—Dr. Frederick N. Winans, Franklin, recently observed his ninety-third birthday. Dr. Winans graduated at Columbia College College of Physicians and Surgeons in 1874.

**Schools and Theaters Closed in Paralysis Ban.**—On July 3 eight playgrounds were closed for one week by Dr. Leo M. Michalek, health officer of Lackawanna, as a precautionary measure against the spread of infantile paralysis, according to the New York *Times*. Four cases had been reported in the Lackawanna area, 2 in the city and 1 each in the villages of Blasdell and Hamburg. Dr. Richard G. Taylor, health officer of the town of Hamburg, ordered all motion picture theaters closed, it was stated.

**Personal.**—Dr. David W. Park resigned his position as superintendent of Potsdam Hospital, Potsdam, effective July 1, to become field representative of the American College of Surgeons. For the time being he will continue to live in Potsdam.——Dr. Leo J. Palmer, Elmira, has retired as superintendent of the Elmira reformatory hospital, a position he had held since Dec. 1, 1939.——Dr. David E. Fraser has been appointed health officer of Lyndonville, succeeding Lieut. Julius J. Layer, M. C.——Dr. John E. Wattenberg, a member of the Cortland Board of Education for five years, has been elected president of the board.——Dr. Willard H. Veeder, Rochester, has been appointed superintendent of the Craig Colony for Epileptics at Sonyea.

**Advisory Council Named to Administer Workmen's Compensation Law.**—On June 25, Governor Dewey appointed a state industrial council of nine members, reduced from fifteen, under a reorganization as a result of the state investigation into administrational aspects of the workmen's compensation law. The council's function is that of an advisory body to the state industrial commissioner on all matters relating to the department of labor, which, in turn, administers workmen's compensation. Under the reorganization act, which requires three representatives each for employees, employers and the medical profession, membership of the former council was terminated on June 1. The new unit includes employee and employer representatives. In addition, medical representatives listed are Albert W. Bailey, osteopath, Schenectady; Dr. Connie M. Guion, New York City, and Dr. Nathan B. Van Etten, Bronx. Dr. Guion and Dr. Van Etten are new appointees, the others having been members of the former council. The reorganization law provides that physicians on the council shall function also as a medical appeals unit which shall "consider all matters connected with the practice of medicine, prescribe rules for the medical practice committee, medical societies or boards investigating medical violations, and shall review charges for medical treatment and care (of injured workmen)," according to the New York *Times*.

### New York City

**Medical Veterans' Aid Fund.**—Trustees of the Physicians Loan and Relief Fund of the Medical Society of the County of New York, under the direction of Dr. Nathan O. Ratnoff, have formed a Medical Veterans' Aid Fund. Returning members in need of economic assistance may borrow from this fund without interest to reestablish themselves in practice, train for a specialty or undergo suitable rehabilitation in the event of disability. Contributions to the fund will be accepted.

**Dr. Cohn Made Member Emeritus at Rockefeller Institute.**—Dr. Alfred E. Cohn, since 1920 a member of the Rockefeller Institute for Medical Research, has been made member emeritus of the institute, having reached the retirement age. Dr. Cohn graduated at Columbia University College of Physicians and Surgeons in 1904, joined the Rockefeller Institute in 1911, and became an associate member in 1914; he has been a member of the China Medical Board of the Rockefeller Foundation since 1934. Promotions on the scientific staff of the institute include those of Walther F. Goebel, Ph.D., from associate member to member and Dr. Robert F. Watson from assistant to associate.

**Report Urges Revocation of Compensation Licenses for 119 Physicians.**—Recommendations that 119 physicians lose the right to handle workmen's compensation cases for periods ranging from fifteen days to one year were contained in a report submitted June 23 to Edward Corsi, industrial commissioner, by the compensation boards of the Queens, Bronx and Westchester county medical societies. According to the New York *Times*, the boards passed on a total of 1,077 cases of medical men accused of participation in "kick-back rackets" and also suggested that 325 doctors be censured, 232 exonerated and the cases of 339, now in the armed services, be filed for future action. Additional hearings were recommended for

two others accused. All the doctors named by the boards have been notified of the recommended disposition, Mr. Corsi said, and have thirty days in which to file appeals before the Industrial Council of the State Department of Labor.

## PENNSYLVANIA

**Health and Human Relations.**—The Pennsylvania Department of Health will sponsor a conference on health and human relations at State College, July 18-19. Among the topics to be discussed will be "How Science Dispels Many Misconceptions About Sex" and "Equitable Divisions of Responsibility in Sex Education Problems Between Teacher, Parent, Physician, Church, Community and State." Among the speakers at the meeting were Dr. Alexander H. Stewart, Harrisburg; Dr. Stanley P. Reimann, Philadelphia; Oscar Riddle, Ph.D., New York; Dr. George Lynde Gately, Boston; Erval R. Coffey, Assistant Surgeon General, U. S. Public Health Service, and Dr. William H. Perkins, Philadelphia.

### Pittsburgh

**Personal.**—Dr. Thomas W. Cook has been appointed chief surgeon of the Pittsburgh Safety Department to succeed Dr. Daniel E. Sable, who retired to engage in private practice. The state medical journal reports that Dr. Sable in his thirty-four years in the position answered 60,000 fire alarms.

**Physicians at Reunion of Johnstown Flood Association.** — Dr. John D. Milligan, Pittsburgh, who will observe his ninety-third birthday July 31, and Dr. Elmer E. Wible, Homestead, formerly deputy coroner of Westmoreland County, attended the Pittsburgh meeting of the Johnstown Flood Correspondents Association on May 31. The group is made up of members who worked in various capacities during the Johnstown flood.

## RHODE ISLAND

**Industrial Meeting.**—The Rhode Island Society of Industrial Physicians and Surgeons and the Rhode Island Industrial Nurses' Club met in joint session May 23 in Providence. Among the speakers were:

Louis Schwartz, medical director, U. S. Public Health Service, Occupational Dermatoses in Rhode Island Industries.
Dr. Clarence O. Sappington, Chicago, The Meaning of Industrial Medicine, Hygiene and Health.
Dr. Orlen J. Johnson, Council on Industrial Health, American Medical Association, Hospitalization and Cash Sickness Insurance Sponsored by Industry.

A feature of the meeting was a symposium on "Reconditioning of Disabled War Veterans and Their Assimilation by Industry."

**State Medical Election.**—Dr. John F. Kenney, Pawtucket, was chosen president elect of the Rhode Island Medical Society during its meeting in Providence May 24-25, and Dr. Elihu S. Wing, Providence, was installed as president. Dr. Fenwick G. Taggart, East Greenwich, was named vice president. Dr. Michael H. Sullivan, Newport, the outgoing president, spoke on "Changing Aspect of Medical Organization." Dr. Reginald Fitz, Boston, delivered the Charles V. Chapin Oration on "Forecast by Numbers." Among other speakers at the meeting were:

Comdr. Clarence C. Fuller (MC), Results in Treatment of 60 Cases of Malaria, and a Review of 100 Cases of Filariasis.
Dr. James R. Miller, Hartford, Conn., Planning for Medical Care.
Dr. Walter C. Alvarez, Rochester, Minn., Sick Headaches.
Dr. Justus B. Rice, New York, Malaria.

## TEXAS

**Training Center for Record Librarians.**—To assist in current hospital problems, a training center for record librarians has been established at the John Sealy Hospital, University of Texas School of Medicine, both of Galveston, under the direction of Miss Margaret McArdle, R.R.L., who is in charge of the record library of the John Sealy Hospital.

**State Medical Election.**—Dr. Claude C. Cody Jr., Houston, was chosen president elect of the State Medical Association of Texas at its annual meeting recently. Dr. Herschel F. Connally, Waco, was installed as president. Other officers include Drs. Ralph G. Johnson, Newgulf, Elbert W. Wright, Bowie, and Herschel E. Wingham, McAllen, vice presidents. Dr. Holman Taylor, Fort Worth, is secretary of the association.

**Survey of Health Facilities.**—A survey of the medical education needs of the state of Texas will be carried out by a committee recently appointed by the board of regents of the University of Texas, the purpose of which is to determine the most appropriate way the university may serve the state in providing educational facilities for promoting the health of the citizens. The survey will include all parts of the state. Members of the committee include members of the board of regents, the dean of the school of dentistry in Houston, Fred C. Elliott, Chauncey D. Leake, Ph.D., dean of the medical branch at Galveston, and Homer P. Rainey, president of the University of Texas.

**News of Baylor University.** — The John and Mary R. Markle Foundation recently awarded a grant of $7,000 to Baylor University College of Medicine, Houston, to support the work of Allen D. Keller, Ph.D., on brain stem and related hypophysial and cerebellar functions during the coming two years. Dr. Keller is professor of physiology and chairman of the department of physiology and pharmacology at the university. Major Carl T. Javert, M. C., lectured to the students and faculty on "Erythroblastosis Fetalis." Major Javert, who held conferences with obstetricians, pediatricians and pathologists, visited the school through a grant awarded by the H. E. Butt Foundation of Corpus Christi. New appointments to the school include those of Carroll A. Handley, Ph.D., Vermillion, S. D., to assistant professor of physiology and pharmacology; Dr. George W. Salmon, St. Louis, to assistant professor of pediatrics; Dr. Don W. Chapman, Iowa City, to instructor in the department of internal medicine, and Dr. William W. Coulter Jr., Kerrville, Texas, to instructor in the department of internal medicine. Miss Ella May Shackleford, formerly with the J. C. Oliver Memorial Research Laboratory, St. Margaret Memorial Hospital, Pittsburgh, and student of the late Max Brödel, has been appointed medical illustrator in the department of visual education.

**Million Dollars Offered Texas University.**—The Sealy and Smith Foundation of Galveston has offered one million dollars to the University of Texas for a new general hospital unit at Galveston. The gift is contingent on the university's spending about another million dollars for a new hospital, which would furnish some 500 more beds than the 409 now available at John Sealy Hospital. The offer, according to the *Texas State Journal of Medicine*, was made for the construction of a pavilion to be known as the R. Waverley Smith pavilion for both pay and semipay patients. The proposed unit, for which the foundation would also provide x-ray equipment and clinical laboratories, would be joined to the present outpatient clinic and children's hospital. Part of the new construction would occupy the site of the women's dormitory on the medical campus. The regents have agreed to provide a new building for women students. No mention was made of what would become of the old Sealy Hospital building, which, after a tropical storm in 1943, was defined as "safe but not satisfactory." The Sealy and Smith Foundation was established in 1927 to promote the development of the John Sealy Hospital of the University of Texas Medical Branch for the purpose of aiding in the care of the indigent sick of Galveston. Since the foundation was established with bequests of John Sealy Jr. and Mrs. R. Waverley Smith, it has contributed more than $1,500,000 to the upkeep and support of the hospital and has contributed over $550,000 toward the expense of new building. It continues the benefactions of John Sealy, who died in 1884 and whose will made possible the establishment of the hospital in association with the medical branch in Galveston in 1890.

## GENERAL

**Gift to Pharmaceutical Foundation.**—A total of $485,000 has been contributed to the American Foundation for Pharmaceutical Education by 300 drug firms, it is reported (THE JOURNAL, June 17, p. 506).

**Secretary Named for American Bacteriologists.** — Leland W. Parr, Ph.D., professor and executive officer of the department of bacteriology, George Washington University School of Medicine, Washington, D. C., is the new secretary-treasurer of the Society of American Bacteriologists. His address is 1335 H Street N.W., Washington 5.

**Petition to Form Hospital Libraries Division.**—A petition is being circulated to form a hospital libraries division of the American Library Association. If organized, the division would contain parallel sections for hospital, institutional, medical and schools of nursing libraries. Interested persons should communicate with Mrs. Glyde B. Nielsen, secretary-treasurer, Hospital Libraries Round Table, Minneapolis Public Library, Minneapolis.

**Officers of Anesthesiology Board.** — Dr. Harry Boyd Stewart, Tulsa, Okla., was elected president of the American Board of Anesthesiology, Inc., at its meeting in Chicago, June 9-11. Dr. Philip D. Woodbridge, Philadelphia, was named vice president and Dr. Paul M. Wood, New York, secretary-treasurer. The next written examination of the board will be conducted Jan. 19, 1945 at various medical schools, the names

to be announced later. The next oral examination of the board will be held in New York preceding the annual session of the American Medical Association.

**Special Society Elections.**—Dr. Harold I. Lillie, Rochester, Minn., was named president of the American Laryngologi al Association at its annual meeting, June 8. Dr. Arthur W. Proetz, St. Louis, is secretary.——Dr. Samuel W. Hamilton, Washington, D. C., was chosen president-elect of the American Psychiatric Association at its annual meeting in Philadelphia in May and Dr. Karl M. Bowman, San Francisco, was installed as president. Dr. Winfred Overholser, Washington, was reelected secretary-treasurer.

**Fund Available for Health Education in Poliomyelitis.**—The National Foundation for Infantile Paralysis has set aside $50,000 for fellowships in health education. Under the program, which has been developed in cooperation with the U. S. Public Health Service, qualified men with certain selective service classifications, as well as qualified women, will begin training this fall. It is believed that trained personnel will be of great assistance in coordinating the community's resources of official and voluntary agencies. Candidates for these fellowships will be chosen by an advisory committee of the U. S. Public Health Service, and those accepted will be assigned to schools of public health at Yale University, University of Michigan and the University of North Carolina. The bachelor of science degree or its equivalent at a recognized college or university is an essential qualification for one of these fellowships leading to the master of science degree in public health. This postgraduate training will consist of nine months' academic work, followed by three months of supervised field experience. Women between the ages of 19 and 40 who have these educational qualifications and who are citizens of the United States are eligible. Men who are United States citizens over 30 years of age also may apply, and the War Manpower Commission has declared Selective Service registrants in 4F and 1AL classifications as eligible for health education fellowships. A fellowship in health education covers a stipend to the trainee of $100 monthly for twelve months, tuition and university fees to the school and expenses for field service. Applications are obtainable from the Office of the Surgeon General, U. S. Public Health Service, Washington (14), D. C. Applications must be accompanied by a transcript of college credits and a small photograph and must be in the Office of the Surgeon General not later than August 15.

## CANADA

**National Department of Health.**—If recently proposed actions take place, the department of pensions and national health will cease to exist, according to the *Canadian Journal of Public Health*. This opinion is based on the recent announcement to parliament of the establishment of three departments of government, social welfare, veterans' affairs and reconstruction. According to the *Journal of Public Health* the department of reconstruction will advance and coordinate a broad program designed to meet postwar needs. The department of social welfare will be responsible for the administration of insurance measures and those functions in the field of public health which are under the health branch of the department of pensions and national health. The work of the pensions branch will be assumed by the new department of veterans' affairs. The department of pensions and national health will cease to exist, it was stated. Hospitalization of returned soldiers will be the responsibility of the department of veterans' affairs, causing a separation of hospitalization, which is essentially a health matter, from the department charged largely with the responsibility for health, since the work of the health branch of the department of pensions and national health will presumably be administered by the department of social welfare. The editorial in the *Canadian Journal of Public Health* says it is most disappointing that, if the proposed measures are adopted, Canada will no longer have a national health department, even though the health services may be included in the broad designation "social welfare." The editorial points out that this reorganization raises the whole question of the status of the public health services in the federal government. When the department of national health was established in 1919 there was approval of centralizing public health work in one department which would be represented in the cabinet by the minister of health. In June 1928, when the department of soldiers' civil reestablishment ceased to function, the administration of veterans' affairs was transferred to the department of national health, which subsequently was known as the department of pensions and national health. Today, says the *Journal of Public Health*, sixteen years after the amalgamation of the two departments, the budget for pensions is about fifty times that for national health.

## FOREIGN

**Activities in Tropical Medicine.**—The Swiss Society for Tropical Medicine has been founded at Berne under the presidency of Dr. Paul Thillot, Lausanne, it is reported. It is also announced that an institute for tropical medicine has been founded at Basle.

**Australian Named Director of Wellcome Research Laboratories.**—Dr. Charles Halliley Kellaway, F.R.S., director of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Royal Melbourne Hospital, Melbourne, Australia, has been appointed director of the Wellcome Foundation Research Laboratories in England and the United States. Dr. Kellaway will be succeeded in his Melbourne position by Dr. Frank M. Burnet. Dr. Kellaway will be located in London.

**Personal.**—Dr. James Augustus Wall has been appointed government medical officer at Leeton, New South Wales.——Dr. Gordon Clive Smith has been appointed medical officer for industrial hygiene in the department of public health at New South Wales.——Sir Humphry D. Rolleston has resigned as editor of the *Practitioner*, a position he has held since 1928. Dr. Alan A. Moncrieff, associate editor since 1934, will act as editor.——Sir John Fraser, Bart., regius professor of clinical surgery at the University of Edinburgh, has been appointed to succeed Sir Thomas H. Holland as principal of the University of Edinburgh.

**Program for Tuberculosis Control.**—Dr. J. Bell Ferguson, state director of tuberculosis control in Victoria, Australia, has launched a tuberculosis control program involving the provision of 2,000 beds at a cost of £606,500. The state government has approved of the provision of 144 beds at an estimated cost of £65,000. The tuberculosis control program includes a radiologic review of every child at the age of 12 years. Legal authority is sought for the detention of sufferers in sanatoriums to prevent transmission. According to a report from the division of medical sciences of the National Research Council, it has been found that between 60 and 70 per cent of all home contatts are infected within five years. It was pointed out that the death rate from tuberculosis in Victoria is increasing. In 1940 it was 42.3 per hundred thousand of population, while in 1942 it was 46.2, with a total of 879 deaths from tuberculosis, the worst record in Australia.

**Medical Journals in China.**—The *Chinese Medical Journal*, a few copies of which have recently been received in this country, is being published in Chengtu, an unoccupied city of China. Published on cheap paper, the journal is made up under great difficulties. The articles are chosen for their practical value in the free portions of China. They are written in English and hand set, in many cases by Chinese who do not even know the English language. The Medical Abstracts, supplement to the *Chinese Medical Journal*, are being published under similar circumstances. The subscription price per year of the *Journal* and abstracts is 200 national currency. Four issues of the journal published in October 1942 and in January, April and July 1943 contain original articles, editorials, news and correspondence and constitute the series for volume 61A. The October 1942 issue was designated the Chengtu edition, volume one, number one, and contained a preliminary announcement of the sixth biennial conference of the Chinese Medical Association planned for Koloshan, Chungking, May 11-14, 1943. The original articles appear in many cases as contributions of faculty members of the West China Union University, Chengtu, the National Kweiyang Medical College, Kweiyang, the National Central University College of Medicine, Chengtu, the Cheeloo University, Shantung and Chengtu, the United Hospital of the Associated Universities, Chengtu, the National Shanghai Medical College, Chungking, and others. A few illustrations are used. One issue published in 1943 announced that the medical subcommittee of the committee for the promotion of the welfare of the blind had been organized. Mail is sent from the United States to China at a cost of 70 cents a half ounce. This charge applies to mailing rates for medical journals.

## CORRECTION

**Posterior Dislocation of the Sternal End of the Clavicle.**—In the article by Greenlee with this title in THE JOURNAL, June 10, page 426, the second sentence in the first paragraph should read "Emphasis has been placed on injuries of the brain in connection with skull fractures, on injuries to the spinal cord in connection with fractures of the spine, on injuries to the lung in connection with rib fractures and on injuries to the bladder, urethra and bowel in connection with fractures of the pelvis."

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

June 10, 1944.

### Postponement of the Annual Representative Meeting of the British Medical Association

The annual representative meeting of the British Medical Association, due to begin July 18 in London, was canceled. So also was the panel conference of the association, which was to have been held in June. The reason for these changes was transportation difficulties, which are greater than ever at this stage of the war and have entailed the cancellation of many meetings of all kinds. The secretary of the British Medical Association wrote to the Ministry of War Transport regarding the holding of the meetings mentioned and received a reply from the minister of health that in view of the difficulties of transportation over long distances it was desirable to avoid the calling of conferences. He regretted that the July conference of the association and also the panel conference should have to be postponed. He expressed hope that it will be possible for these conferences to be held later in the year. He will communicate with the secretary as soon as it is possible to inform him of the removal of present restrictions. Postponement of the representative meeting delays the discussion dealing with the most momentous question that ever occupied the association: the line to be taken with regard to the government's proposal for a national health service. This postponement must greatly delay legislation on the subject.

### Ministry of Health Standardizes Tests of Recovery from Venereal Diseases

The Ministry of Health has issued a memorandum for the guidance of medical officers at treatment centers for venereal diseases, specifying the tests which should be employed before discharging persons who have suffered from syphilis or gonorrhea. In the case of gonorrhea it is assumed that treatment has been continued until evidence of persisting infection has disappeared. The blood should be examined a week after treatment has been suspended and every month thereafter for a minimum of three months for the serum reactions. Men should be provided with microscopic slides and instructed how to spread them when any urethral discharge may appear. A week after suspending treatment the early morning urine, or urine held for a minimum of four hours, should be examined for heavy threads, after an attempt to obtain discharge at the meatus. Any threads or discharge should be examined bacteriologically. Specimens of prostatic and vesicular secretion should be obtained for microscopic examination. Cultures of both urethral and prostatovesical secretion are desirable. If no evidence of persisting infection is obtained, an attempt should be made to stimulate discharge by filling the anterior urethra with a provocative solution, such as a 1 in 6 dilution of iodine 1, potassium iodide 2 and distilled water 300 parts. This should be retained for over two minutes. As a further provocative measure the prostate and seminal vesicles should be massaged after the bladder has been emptied, and the secretion should be left in the urethra. If no evidence of relapse is obtained, these measures should be repeated weekly for one month and thereafter each month for two or more months. At the end of this time the anterior urethra should be examined with a urethroscope, and a full sized metal sound passed into the bladder. These manipulations may produce a discharge, of which the patient should be warned to obtain a specimen.

In the case of women a week after suspending treatment specimens should be taken from the urethra, cervical canal and rectum and examined in stained smear and culture. In the case of the urethra and cervical canal, specimens should preferably be taken the day after painting with a provocative chemical such as that described. In addition the examination should include inspection of the orifices of the bartholinian and any paraurethral ducts, with bacteriologic examination of any secretion which can be expressed. This process should be repeated weekly for a month and thereafter every month for three months, the specimens being taken just after menstruation if this is occurring. Before final discharge, careful pelvic examination should exclude any residue of infection in the pelvic viscera.

In cases of syphilis the blood should be tested every three months after completing treatment for the first year and every six months for the second year. The spinal fluid should be tested at the end of treatment or earlier if the blood reactions are resistant, and the test should be repeated at the end of two years of observation. These tests are regarded as minimal for both sexes. If any relapse has occurred, both blood and spinal fluid should be tested more frequently. In the case of women satisfaction of these tests is not considered a sufficient safeguard against infection of the fetus in case of pregnancy, and treatment throughout the whole period of gestation is advised.

### Care of the Student's Health

A pamphlet entitled "Health and the Student" has been produced by the collaboration of four students' organizations—the the National Union of Students, the British Medical Students Association, the British Dental Students Association and the Scottish National Union of Students. It describes an elaborate scheme for the care of students. All students should be medically examined on entry to the university and subsequently at regular intervals by a full time university medical officer who would also give lectures, the pamphlet recommends. X-ray examination of the chest should be performed on admission and at six month intervals. There should be a biennial Mantoux test. Regular dental inspection is desirable. In regard to mental health the dangers of a narrow scholastic outlook are emphasized. University authorities should give attention to the supply of cheap lodgings or hostels and good food, the authors believe.

Good use should be made of existing playfields, and where they are scarce they should be shared with other groups of young people, such as youth and sports clubs, irrespective of ownership. If the shortage of doctors at present makes regular medical inspection of all students impossible, it should be arranged at least for medical and dental students, who are more exposed to infection than others. The cost of protecting the students' health could be covered by a comprehensive insurance scheme, it is stated. So far, only one full time university medical officer has been appointed—at Birmingham.

### E. Hurry Fenwick

The death at the age of 88 of Mr. E. Hurry Fenwick removes a man who in the first quarter of the century was the most prominent urologist in this country. The son of Samuel Fenwick, physician to the London Hospital, he was educated there, qualifying in 1880. After postgraduate study on the continent, particularly at Berlin and Leipzig, he became assistant surgeon to the London Hospital and later to St. Peter's Hospital for Genito-Urinary Diseases. He was one of the first to use Nitze's cystoscope. An excellent teacher and prolific writer, he had ten books to his credit, which were largely based on his extensive experience. When the International Congress of Medicine met in London in 1913 he was president of the section of urology. Fenwick was quick to apply Roentgen's discovery and in 1905 designed the first ureteral bougie opaque to the x-rays. He played a large part in the advances in the visual examination of the bladder. He kept full records of his cases, on which he based his practical teaching. Recently, at 87, he contributed to the *British Medical Journal* a note on the "Expectation of Life After Nephrectomy for Urinary Tuberculosis."

## BOLIVIA

*(From Our Regular Correspondent)*

April 18, 1944.

### Incidence of Right and Left Eye Trauma in Industry

The relative incidence of injury to the right and left eye has been investigated on some 58,000 miners whose records are available to the Bolivian Health Security Board. The total number of accidents listed was 8,396. Among these were 579 accidents involving one or both eyes: 229, or 39.5 per cent, involved the right eye; 282, or 48.7 per cent, the left eye, and 68, or 11.7 per cent, both eyes. In three different mining companies there were accurate histories of 257 cases of eye injury. Of these, 92, or 35.8 per cent, involved the right eye, 133, or 51.7 per cent, the left eye and 32, or 12.4 per cent, involved both eyes. "Mining" as used here refers to accidents peculiar to mining work, such as breaking rock by machine or by hand. "Stone breaking" refers exclusively to the breaking of larger stones with a hammer, inside or outside the mines. "Different occupations" includes all the other types of work, performed mostly by unskilled workmen; blows, carelessness by associates and similar accidents occurring during work hours, but not directly as a result of work. There were no available figures as to the number of engines employed in each company.

TABLE 1.—*Frequency of Right and Left Eye Involvement on Various Jobs*

| Side | Mining | | Mechanic | | Carpenter | | Arc Welder | | Stone Breaker | | Caustics | | Different Workers | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Right eye | 16 | 6.23 | 29 | 11.28 | .. | .... | 6 | 2.33 | 8 | 3.10 | .. | .... | 33 | 12.84 |
| Left eye | 24 | 9.34 | 39 | 15.17 | 4 | 1.56 | 15 | 5.84 | 9 | 3.50 | .. | .... | 42 | 16.34 |
| Both eyes | 9 | 3.50 | 5 | 1.95 | .. | .... | 10 | 3.89 | .. | .... | 5 | 1.95 | 3 | 1.17 |

Relatively frequent are eye accidents among engineers, although there was only an average of 4.5 per cent of this profession employed in the entire staff.

The more frequent involvement of the left eye on different jobs is shown in table 1. The difference between right and left eye accidents in the miner's job is striking (24 of the left eye as against 16 of the right) and among engineers (39 of the left as against 29 for the right).

#### CAUSES FOR DIFFERENCE IN FREQUENCY OF INVOLVEMENT OF THE RIGHT AND THE LEFT EYE

*Miners.*—The miner's specific work consists of drilling holes in the rock. This work is done with a perforator engine, mostly without water protection; or by hand, using chisel and hammer to make a hole which will later be loaded with dynamite. When working with the perforator, most workmen hold it alternately on each shoulder, so that there is an equal chance to get a foreign body into either eye. When drilling holes by hand, the man holds his hammer in his right hand, the chisel in his left. Swinging the hammer, he holds the chisel in his left hand, turning it around its longitudinal axis. Most of these eye accidents seem to happen during the first blows. The man is constantly bending his left side forward, his right eye being partially protected against splinters by his nose. The higher incidence of left eye accidents in this particular job may be attributed to this factor.

*Engineers.*—There is a higher incidence of eye accidents in this job than in any other, 28.40 per cent in the present study. In all the companies investigated, the number of engineers employed does not exceed an average of 4.5 per cent of all workmen employed. Most of the accidents are caused by carelessness. The mechanics are ordered to use protective glasses when working with certain tools such as chisels or grindstone. As to the distribution of accidents among engineers, the figures in table 2 indicate the tools used.

Noteworthy is the relatively higher incidence of accidents caused by working with the chisel.

*Arc Welders.*—A bad habit exists among these workers: when beginning a new welding wire they clean the isolated tip after placing the electrode in the handle by rubbing against the connecting iron pieces, causing many small arcs, without dropping the protective shield. As this rubbing is mostly effected from the left to the right side of the body, there is obviously more chance to get the arc flash burn in the left eye, but there is no other evidence that this is the only cause for higher left eye involvement. All the cases referred to as "arc welding" were diagnosed as flash conjunctivitis.

TABLE 2.—*Frequency of Right and Left Eye Involvement Among Mechanics as to the Tools Used*

| Tool | Right Eye | | Left Eye | | Both Eyes | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Chisel | 6 | 8.22 | 17 | 23.30 | .. | .... |
| Turning lathe | 2 | 2.74 | 3 | 4.11 | .. | .... |
| Grind stone | 21 | 28.77 | 19 | 26.03 | .. | .... |
| Hot air, fumes | .. | ..... | .. | ..... | 5 | 6.85 |

*Other Occupations.*—A somewhat higher incidence of left eye involvement was found only in one other type of work: introduction into the eye of foreign bodies while sweeping the workroom floor with a broom. In this series there were 32 cases thus distributed: right eye 8 cases, left eye 23 cases, both eyes 1 case.

As to the seriousness of these 579 eye accidents, there was only one perforation of the right eye; all other accidents amounted only to introduction or incrustation of foreign bodies, irritative conjunctivitis produced by arc welding, hot air, fumes, caustics and the introduction of the relatively acid water.

#### CONCLUSIONS

In a series of 8,396 accidents, there were 579 eye accidents, or 6.89 per cent. Accurate investigation of 257 cases disclosed left eye involvement to be as high as 51.75 per cent as against 35.80 per cent for the right eye. Most exposed to eye accidents were engineers (28.40 per cent), although there was only an average of 4.5 per cent of engineers in the whole staff. Next in order were miners. Most left eye accidents occurred while working with a chisel. A little higher incidence of left eye accidents was noted also among unskilled workers sweeping floors, and among arc welders. The present study is a fair cross section of a large number of all types of accidents recorded by several mining companies.

## *Marriages*

FURNIFOLD MCLENDEL SIMMONS PATTERSON, New Bern, N. C., to Miss Ruth Adriel Read of Philadelphia, June 13.

JEREMIAH HENRY HOLLEMAN, Pickens, Miss., to Miss Agnes Willette Smith of Greenwood, June 12.

VANCE BENTON ROLLINS, Henderson, N. C., to Miss Carrie Lee Laney of Camden, Ark., June 20.

JAMES ROBERT FLAUTT JR., Swan Lake, Miss., to Miss Mary Louise Smith in Clarksdale, June 20.

# Deaths

**William Thornwall Davis** ✠ Washington, D. C.; Columbian University Medical Department, Washington, 1901; since 1920 professor of ophthalmology at the George Washington University School of Medicine; professor of ophthalmology at the U. S. Army Medical School, 1917-1918; a first lieutenant and later a captain in the medical corps of the U. S. Army from 1902 to 1913; served under Gen. Leonard Wood in the Philippines in the Moro campaign of 1904-1905 and under Gen. Frank McCoy in the Datu Ali Campaign in 1905; a major in the medical corps of the U. S. Army during World War I; served as a member of the advisory board, Selective Service Board; specialist certified by the American Board of Ophthalmology; member and in 1935 first vice president of the American Academy of Ophthalmology and Otolaryngology; member and at one time member of the council and chairman of the executive committee council of the Southern Medical Association; member of the Pan American Medical Association and the Washington Academy of Medicine; a member of the Sons of the American Revolution, Military Order of Foreign Wars of the United States, Military Order of the Caraboa, Spanish-American War veterans and others; in 1940 was decorated with the Order of Carlos J. Finlay; consultant and chief of service in ophthalmology, George Washington University Hospital; senior surgeon at the Episcopal Eye, Ear and Throat Hospital; consulting ophthalmologist, Garfield, Columbia, Gallinger and Casualty hospitals; member of the board of directors of the Washington Loan and Trust Company; died June 15, aged 67.

**Joseph Brennemann** ✠ Reading, Vt.; Northwestern University Medical School, Chicago, 1900; professor of pediatrics at the University of Chicago School of Medicine from 1921 to 1941; chief of staff of the Children's Memorial Hospital, Chicago, from 1921 to Jan. 1, 1941, when he resigned after serving three years beyond the retirement age; at one time attending pediatrician at the Cook County, St. Luke's and Wesley Memorial hospitals in Chicago; professor of pediatrics at the University of Southern California School of Medicine, Los Angeles, from 1941 to 1943; served as chief of staff at the Children's Hospital in Los Angeles; specialist certified by the American Board of Pediatrics, Inc.; an Affiliate Fellow of the American Medical Association; member of the Illinois State Medical Society, American Academy of Pediatrics, Central States Pediatric Society and the Institute of Medicine of Chicago; honorary member of the British Pediatric Society; member and past president of the American Pediatric Society and the Chicago Pediatric Society; editor of "Brennemann's Practice of Pediatrics"; died July 2, aged 71.

**Carl Fisher** ✠ Los Angeles; Harvard Medical School, Boston, 1905; clinical professor of surgery (ophthalmology) at the University of Southern California School of Medicine; entered the Mayo Clinic, Rochester, Minn., as head of the section on ophthalmology and otology on May 1, 1909 and resigned July 1, 1917; major in the medical corps, American Expeditionary Forces, serving at Base Hospitals number 26, 115 and 57 during World War I; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, Association for Research in Ophthalmology, Inc., Western Ophthalmological Society, Pacific Coast Oto-Ophthalmological Society, Los Angeles Ophthalmological Society and the Alumni Association of the Mayo Foundation; a member of the staffs of the Good Hope Clinic, the Eye and Ear Hospital, St. Vincent's Hospital and the Hospital of the Good Samaritan; died June 7, aged 64.

**Paul Judd Sartain** ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the College of Physicians of Philadelphia; member of the Franklin Institute, Historical Society of Pennsylvania, Zoological Society of Philadelphia, Oxford Ophthalmological Congress, Colonial Society of Pennsylvania and the Société Française d'Ophtalmologie; since 1894 secretary of the Geographical Society of Philadelphia; a member of the Medical Club of Philadelphia, of which he was vice president in 1925; died April 9, aged 82.

**Alonzo Cass Tenney,** Chicago; the Hahnemann Medical College and Hospital, Chicago, 1895; member of the Illinois State Medical Society; formerly adjunct professor of pathology and the theory and practice of medicine at his alma mater; professor of physical diagnosis at the Illinois Post-Graduate Medical School from 1916 to 1919; medical examiner for the Illinois Civil Service Commission from 1915 to 1919; member of the consulting staff of the Illinois Masonic Hospital; on the courtesy staff of the Henrotin Hospital; died in the Research and Educational Hospital, University of Illinois, May 8, aged 70, of coronary insufficiency, decompensation and diabetes mellitus.

**Francis Milton Shockley** ✠ Stamford, Conn.; University Medical College of Kansas City, Mo., 1913; specialist certified by the American Board of Psychiatry and Neurology, Inc.; served in the medical corps of the U. S. Army during World War I; lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty; in 1942 was chosen vice president of the Connecticut Society for Psychiatry and Neurology; formerly physician in charge of Stamford Hall; consultant in psychiatry at the Stamford Hospital; died in the Veterans Administration Facility, New York, April 25, aged 54, of hypertension and coronary heart disease.

**Allison Temple Wanamaker** ✠ Seattle; Northwestern University Medical School, Chicago, 1907; specialist certified by the American Board of Otolaryngology; past president of the King County Medical Society; member of the American Laryngological Association, American Laryngological, Rhinological and Otological Society and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; member of the executive committee and staff, King County Hospital; on the staffs of the Children's Orthopedic, Providence and the Swedish hospitals; died June 21, aged 63.

**Gordon Ira Trevett,** Baltimore; Cornell University Medical College, New York, 1936; instructor in preventive medicine at the Johns Hopkins University School of Medicine; served as instructor in preventive medicine at the Johns Hopkins University School of Hygiene and Public Health; formerly an intern in surgery at the New York Hospital and intern in medicine at the Strong Memorial and Rochester Municipal hospitals, Rochester, N. Y., where he had been a resident in internal medicine; since Sept. 1, 1940 assistant dispensary physician at the Johns Hopkins Hospital, where he died May 3, aged 32, of carcinoma of the rectum with metastases.

**Ida E. Shope Bishop,** Winslow, Ariz.; Woman's Medical College of Georgia and Training School for Nurses, Atlanta, 1892; died April 29, aged 88, of senility.

**Frank T. Carmer,** Newfane, N. Y.; University of Buffalo School of Medicine, 1894; member of the Medical Society of the State of New York; served as acting assistant surgeon in the U. S. Public Health Service; health officer of Lockport, and county coroner; on the staff of the Lockport City Hospital, Lockport; died April 16, aged 75, of cerebral hemorrhage.

**Herbert Ross Clark,** Pierce City, Mo.; Beaumont Hospital Medical College, St. Louis, 1901; served during World War I; died April 9, aged 67, of chronic myocarditis and terminal nephritis.

**James A. Garfield Clayton,** Eaton, Colo.; Hering Medical College, Chicago, 1905; member of the Colorado State Medical Society; at one time mayor of Craig, member of the city council and coroner of Moffat County; on the staff of the Greeley Hospital, Greeley, where he died April 12, aged 62, of duodenal ulcer hemorrhage.

**Carroll Stoll Davenport** ✠ Lansing, Mich.; University of Michigan Medical School, Ann Arbor, 1922; specialist certified by the American Board of Radiology, Inc.; formerly instructor in roentgenology at his alma mater; member of the Detroit Roentgen-Ray and Radiological Society and the Michigan Association of Radiologists; in charge of the x-ray department of St. Lawrence Hospital, where he died April 26, aged 46, of coronary spasm.

**Walter Martin Droll,** Alta Vista, Kan.; Rush Medical College, Chicago, 1893; served as coroner of Wabaunsee County; on the staff of the Newman Memorial County Hospital, Emporia; died March 28, aged 75.

**Willoughby George Dye** ✠ Los Angeles; Northwestern University Medical School, Chicago, 1901; fellow of the American College of Surgeons; served during World War I; at one time on the staff of St. Joseph's Hospital, Deer Lodge, Mont.; died in St. John's Hospital April 1, aged 70, of congestive heart disease.

**John Clement Ellis** ✠ Panama City, Fla.; Atlanta College of Physicians and Surgeons, 1906; served during World War I; company physician for the Wainwright Shipbuilding Company; instrumental in organizing the Taylor County Health Unit; past president and secretary of the Taylor County Medical Society; died April 19, aged 61, of coronary occlusion.

**Paul Smith Fox,** Athens, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; served as president of the village and member of the board of education; died in the Community Hospital, Battle Creek, April 26, aged 83, of pneumonia.

**Norman Wilkinson Gillespie,** Boston; Harvard Medical School, Boston, 1915; member of the Massachusetts Medical Society; a first lieutenant in the medical corps of the U. S. Army during World War I; on the staff of the Boston Lying-in Hospital; died April 28, aged 56, of acute coronary occlusion.

**Henry Harrison Harvey,** La Mesa, Calif.; University of Denver Medical Department, 1897; died April 3, aged 67, of coronary sclerosis.

**Fred Hexamer,** Newark, N. J.; University of the City of New York Medical Department, New York, 1888; member of the Medical Society of New Jersey; died April 28, aged 77, of cerebral hemorrhage.

**Charles Tilden Hunt,** Dayton, Ohio; Miami Medical College, Cincinnati, 1906; member of the Ohio State Medical Association; served in the medical corps of the U. S. Army during World War I; died in Detroit April 28, aged 67, of coronary thrombosis.

**Paul Mallers Hunter** ✠ San Marino, Calif.; Chicago College of Medicine and Surgery, 1917; served during World War I; formerly affiliated with the Collis P. and Howard Huntington Memorial Hospital, Pasadena; died in Pasadena April 29, aged 53, of coronary thrombosis.

LIEUT. COMDR. RICHARD M. FORSYTHE (M.C.), U.S.N.R., 1913-1944

**Robert Everett Jones,** Denver; Marquette University School of Medicine, Milwaukee, 1935; member of the Colorado State Medical Society; served an internship at St. Luke's Hospital and a residency at the Children's Hospital; died April 12, aged 36, of pulmonary embolism.

**Robert Maxwell I. Kinnear,** La Crosse, Wis.; Chicago Homeopathic Medical College, 1890; died in a local hospital April 15, aged 83, of carcinoma of sigmoid and colon and arteriosclerosis.

**Theodore Kroesch** ✠ Enterprise, Kan.; Rush Medical College, Chicago, 1905; county health officer; found dead April 5, aged 63, of poison, self administered.

**Charles Lewis,** St. Louis; St. Louis College of Physicians and Surgeons, 1891; died in the De Paul Hospital April 18, aged 82, of heart disease and a fractured hip received in a fall.

**Bernard Graves Marr,** Dyersburg, Tenn.; University of Louisville (Ky.) Medical Department, 1911; member of the Tennessee State Medical Association; served on the staff of the Baird Brewer Hospital; died April 23, aged 60, of pernicious anemia.

**Thaddeus Leander Mathers,** Matherville, Miss.; Medical College of Alabama, Mobile, 1904; died April 18, aged 87, of coronary thrombosis.

**James Francis McCaw,** Watertown, N. Y.; College of Physicians and Surgeons, New York, 1892; specialist certified by the American Board of Otolaryngology; member of the American Laryngological, Rhinological and Otological Society and formerly vice president; member of the American Otological Society, Inc.; fellow of the American College of Surgeons; served on the staffs of the Jefferson County Orphan Asylum and the House of the Good Samaritan, where he died April 29, aged 80, of coronary thrombosis.

**Charles Henry McHaffie,** Ash Grove, Mo.; Ensworth Medical College, St. Joseph, 1906; member of the Missouri State Medical Association; veteran of the Spanish-American War; served overseas as a captain in the medical corps of the U. S. Army during World War I; died in the Springfield Baptist Hospital, Springfield, April 12, aged 64, of pulmonary embolism following an operation.

**Charles D. Mohler,** Hastings, Mich.; Detroit College of Medicine, 1905; served as health officer; on the staff of the Pennock Hospital; died April 27, aged 65, of heart disease.

**Grant B. Nichols,** Wapakoneta, Ohio; Medical College of Ohio, Cincinnati, 1883; member of the board of education; surgeon for the Western Ohio Railroad; died April 26, aged 82, of cerebral embolism.

**George Gibson Parlow,** Wareham, Mass.; College of Physicians and Surgeons, Boston, 1905; member of the Massachusetts Medical Society; a captain in the medical corps of the U. S. Army during World War I; formerly a member of the board of health and the school board; at one time on the staffs of the Fall River General and Union hospitals, Fall River; died April 20, aged 74, of cerebral thrombosis and arteriosclerosis.

**George Burgess Pierce,** New York; Harvard Medical School, Boston, 1898; died in the New York Hospital May 3, aged 68, of hypertensive cardiovascular disease with arteriosclerotic heart disease.

**Edward Reinert** ✠ Columbus, Ohio; Ohio Medical University, Columbus, 1897; member of the American Radium Society; at one time night physician for the Ohio State Penitentiary, surgeon to the city police department and assistant superintendent of the city board of health; formerly a member of the state board of administration; died in the Grant Hospital April 30, aged 70, of aplastic anemia due to radium and x-ray emanation.

CAPT. CARL O. NORD, M. C., A. U. S., 1912-1944

**James Blaine Shoemaker** ✠ Miami, Ind.; Pulte Medical College, Homeopathic, Cincinnati, 1910; served during World War I; died in Crow Wing Township, Minn., May 13, aged 59, of coronary thrombosis.

**Aloysius Joseph Wochinski,** Chicago; Loyola University School of Medicine, Chicago, 1918; member of the Illinois State Medical Society and the American Urological Association; fellow of the American College of Surgeons; specialist certified by the American Board of Urology, Inc.; associate clinical professor of urology at his alma mater; attending genitourinary surgeon, Alexian Brothers' and Columbus hospitals; died May 30, aged 51, of coronary occlusion.

## KILLED IN ACTION

**Richard Monroe Forsythe,** East Cleveland, Ohio; Western Reserve University School of Medicine, Cleveland, 1937; served a residency at the Grasslands Hospital in Valhalla, N. Y., and the Le Roy Sanitarium in New York; commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on May 31, 1940; later promoted to lieutenant and lieutenant commander; died of wounds received in action in the Southwest Pacific area March 30, aged 30.

**Carl Oscar Nord,** Drexel, Mo.; Northwestern University Medical School, Chicago, 1943; served an internship at St. Luke's Hospital in Kansas City, Mo.; commissioned a first lieutenant in the medical corps, Army of the United States, on June 12, 1943 and began active duty at Carlisle Barracks, Pa., on July 13, 1943; later promoted to captain; served with the 45th infantry division on the Anzio beachhead; killed in action in the North African theater May 15, aged 32.

# Bureau of Investigation

## CEASE AND DESIST ORDERS

### Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission, in helping to protect the public against misrepresentation or fraud in the medical as well as other fields, has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food, Drug and Cosmetic Act of 1938 increased the Food and Drug Administration's control of the advertising claims and statements made on the label of a medicine or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission by virtue of the Wheeler-Lea Amendment.

THE JOURNAL has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practices or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order, in which the individual, manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable. In some cases the claims cited have been discontinued by the firms several months (or even longer) before the issuance of the order. Abstracts of some of the orders issued in 1943 follow in this form: name of product, name of distributor, date of issuance of complaint, date of issuance of Cease and Desist Order and terms of order.

**Amogen Tablets.**—J. R. Hodges, trading as Amogen Company, San Antonio, Texas; complaint issued Sept. 21, 1942; order issued July 31, 1943. Order directed Hodges to discontinue any advertisements which misrepresented the properties of these tablets and failed to reveal the harmful results from long continued use of them. The order further directed Hodges to cease representing that his product is a cure or remedy for, or has any value in the treatment of, malaria, common colds and fevers, poor digestion, acid or gas on the stomach, neuralgia, rheumatic pains and fever, sallow complexion, boils, skin irritations, or overindulgence in food and drink; that it offers any benefit in biliousness, excess bile in the system, headaches, coated tongue, or bad taste in the mouth, in excess of temporary laxative relief, as when such conditions are due to constipation, or that it will rid the system of poisons or enable the user to avoid sickness or maintain good health. The order further directed the respondent to discontinue any advertisement which did not reveal that continued use of Amogen Tablets over a long period of time may result in mercury poisoning, and that the product should not be used in case of abdominal pains, nausea or other symptoms of appendicitis; provided, however, that such advertisement need contain only the statement, "Caution: Use only as directed" if the directions for use, when appearing on the label, contain warnings to the same effect. The Commission found that the preparation is essentially a laxative containing calomel, a mercury derivative, that its continued use may result in mercury poisoning and serious injury to health, and that it has no value in the treatment of the disorders for which it has been advertised. The Journal for August 29, 1942, page 1522, recorded a stipulation which J. R. Hodges entered into with the Commission in July 1941, in which he had agreed to discontinue some of the foregoing objectionable misrepresentations.

**Domestic Short-Wave Diathermy.**—Max E. Heyman and Maude S. Jaret, trading as Domestic Diathermy Company, New York; complaint issued April 16, 1943; order issued June 21, 1943. Order directed these respondents to discontinue the following advertising misrepresentations: That their device is safe or harmless or that, when used by unskilled laymen in the treatment of self-diagnosed conditions, it constitutes a competent treatment of, or remedy for, rheumatism, arthritis, sciatica, neuralgia, lumbago, sinus trouble, neuritis, laryngitis, tonsillitis, bursitis, asthma, female complaints, and some other things; that its use will renew youthful vigor and establish bodily efficiency and resistance to disease, and that the treatment which the device provides is similar to that known as "friendly fever." The order further prohibited dissemination of any advertising which would fail to reveal clearly and conspicuously that this mechanism is not safe to use for any condition unless a competent medical authority has determined by diagnosis that diathermy is indicated and has prescribed the frequency and rate of application of the treatments and the user has been adequately instructed by a trained technician in the use of the device.

**Dorothy Gray Cosmetics.**—Lehn & Fink Products Corporation, and its subsidiary, Dorothy Gray, Ltd., both at Bloomfield, N. J.; complaint issued June 4, 1938; order issued June 24, 1943. Order directed the respondents to cease representing that the vitamin D content in their cosmetic creams will cause the coloring of the skin to be cleared or brightened, make skin texture softer, smooth lines, or provide any beneficial effect whatever; or that treatment with these preparations tightens the relaxed contour of the face, stimulates lagging circulation or clears the pores of dirt. The order, however, permitted the respondents to represent that such creams may remove superficial accumulations of dirt from the pore openings. The order further directed the respondents to cease representing that their "Special Toning Oil," when used alone or in combination with their other products, will penetrate the skin, or that their preparations, on the whole, will remove, counteract or fortify against lines or wrinkles in the skin. It did not, however, prohibit the representation that an emollient cream which lubricates the skin will aid in smoothing out lines caused solely by dryness of the skin.

**Elsaco Mineralized Water.**—Electrovita Sales Company of Ohio, Norwalk, Ohio; complaint issued Oct. 26, 1942; order issued August 6, 1943. Order directed respondent to cease representing that the product has any beneficial effect other than a tendency to decrease stomach acidity; that it will neutralize any acid condition of the blood stream or rid the body of an acid condition; that it has any beneficial effect in activating the kidneys; that it will supply mineral deficiencies or essential mineral salts needed to keep the body chemistry in balance, or act as an oxidizing agent; that it has any value in treating asthma, kidney or bladder trouble, or any of the numerous diseases named in the advertising, or any other human ailment. The Commission found that the product was essentially the same as ordinary tap water, except for an added amount of calcium hydroxide which could not be obtained by any electrolytic method, but simply was physically added in the course of processing the water.

**Fernet-Branca.**—Fratelli Branca & Company, Inc., New York; complaint issued Sept. 5, 1942; order issued June 11, 1943. Order directed the respondent to cease representing that the preparation is a cure or remedy for stomach disorders, indigestion, headache, insomnia or liver ailments, or would have any value in the treatment of menstrual disturbances. The record shows that in March 1938 the concern had stipulated with the Commission that it would discontinue certain advertising representations similar to those mentioned above.

**Kelp-A-Malt Tablets.**—Associated Laboratories, Inc., Long Island City, N. Y., also known as Allied Laboratories, Kelp-A-Malt Company and Seedol Company; complaint issued Nov. 20, 1936; order issued July 26, 1943. Order directed respondents to cease representing that these tablets will enable those who are weak, emaciated, thin or underweight to overcome such conditions, or persons who are tired or run-down to regain health, strength or vigor; that a well-proportioned body can be acquired through use of the product, or that these tablets possess any value in the treatment of sour or acid stomach, gas or indigestion. Among the findings of the Commission in this case were that Kelp-A-Malt Tablets contain vitamin $B_1$, iron, iodine, calcium and phosphorus.

**Lakota.**—Bertha M. Urban, Ewing, Neb.; complaint issued May 21, 1942; order issued July 24, 1943. Order directed the respondent to discontinue the following misrepresentations in her advertisements of Lakota, a fruit juice: That the product has any medicinal value in the treatment of migraine or sick headache, high blood pressure or abdominal pains or ulcers; that the use of it will remove the cause of migraine headache or relieve the pain or discomfort associated with such condition, or that it has any value in treating constipation. The Commission's findings were that Lakota is composed entirely of the liquid obtained from boiling dried prunes, with ordinary brown or white sugar, and water.

**Latta Cream.**—M. L. Kay and Humbert O'Camp, trading as Latta Cream, New York; complaint issued March 6, 1943; order issued June 19, 1943. Order directed respondents to discontinue any advertisement which represented that this cosmetic will give a youthful and beautiful appearance and make one look younger, that it will effectively remove and eradicate wrinkles, lines, baggy eyes, double chin, sagging muscles or other signs of age, or that the youthful appearance of motion picture stars is brought about through the use of this preparation.

**Mercolized Wax.**—Dearborn Supply Company, Chicago; complaint issued Sept. 25, 1938. The first order was issued August 20, 1939, and, among other things, directed the company to discontinue advertisements which did not reveal that Mercolized Wax contains ammoniated mercury or that its use may injure some persons under certain conditions. The supplemental order issued July 17, 1943, called attention to the first one, and brought out the fact that the use of products containing ammoniated mercury in excessive amounts and in frequent applications is likely to result in erythema, edema, inflammation, irritation or other manifestations of dermatitis, particularly if the skin was cut or broken before the application. The order directed the concern in question to discontinue any advertisements which did not reveal that Mercolized Wax should not be applied to an area of the skin larger than the face and neck at any one time; that too frequent application over excessive periods of time should be avoided; that adequate rest periods between series of treatments should be observed, that the preparation should not be applied where the skin is cut or broken, and that in all cases a proper patch test should be made to determine whether the patient is allergic or sensitive to the product. The stipulation provided, however, that the statement, "Caution: Use only as directed" would be a sufficient warning in the advertising, provided that the same statement should appear on the labels.

# Correspondence

## SEEING EYE DOGS FOR BLINDED VETERANS

*To the Editor:*—Your Current Comment in the June 3 issue of THE JOURNAL, dealing with the act to furnish seeing eye or guide dogs and other necessary equipment deemed useful in their rehabilitation to blinded soldiers, contains several misstatements.

The American Association of Workers for the Blind, the largest professional affiliation of workers for the blind in North America, did not take the view that this was unnecessary legislation and that its purposes could have been achieved satisfactorily through private agencies for the blind. Rather did it, through its Legislative Committee, endorse H. R. 4519 and urge its passage. So also did the Joint Legislative Committee of the American Association of Workers for the Blind and the American Association of Instructors for the Blind (of which I am secretary).

Whether there is one blinded veteran or whether there may be several hundred, we view the matter as one of federal responsibility, supplementing other provisions (including those in Public Law 16 of the 78th Congress) for a comprehensive program of vocational rehabilitation for blinded soldiers. Having given their sight in the service of their country, blinded veterans should not be left to depend on the caprice or ability of the private agency to offer them such services and in such individually selected cases as these private agencies may desire or be able to accommodate. Rather does the American people, through its government, owe it to these veterans to assure that nothing is left undone to secure their rehabilitation, as a matter of right through law, not because of public largesse in response to agency begging in their behalf.

Prior to the enactment of this legislation there developed in various parts of the United States many sporadic movements claimed by their sponsors to be for the purpose of furnishing guide dogs to blinded veterans. In connection with these movements many false and fraudulent representations were made both as to the overall number of blinded service personnel and as to individual cases. The public has been victimized by some of these appeals, and generally speaking there has been an "open season" on blinded soldier appeals which has had the effect of degrading the veterans and of fostering the idea that their government has neglected them and that consequently private agencies have felt compelled to beg in their behalf. This legislation will now protect both the blinded veterans and the public against such appeals. Self interest was largely in evidence on the part of those opposing it.

As enacted, the legislation simply places a ceiling of $1,000,000 on the amount which may be spent for the purposes outlined. It does not require the expenditure of this amount, and unless needed the sum may not all be spent. But whether there are few or many blind veterans it should be remembered that dogs can serve only for limited periods and that replacements will be necessary and can be provided through this measure. Incidentally, in the opinion of many, considerably more than 10 per cent of the blinded veterans will be found able and eager to use a dog. The factors involved differ materially from the civilian problem.

What is the alternative? In most cases guide-dog schools serving the civilian blind have expressed a willingness to give priority to the blind veteran, but some still require payment by the veteran of the sum charged to civilian blind, usually $150, representing only a small part of the cost, the rest of which is provided through public contributions to these private agencies. We can find no reason why blinded veterans should be expected to pay $150 for a dog and a similar sum every seven or eight years for a replacement, or for the private agency to be continually obliged to beg for funds to make up additional costs connected with the furnishing of dogs—which appeals, like the brook, might go on for ever.

The blind veteran is entitled to every necessary service which a grateful country can by law make available to him, and those who oppose such legislation would do well to ask themselves whether they prefer that we indulge in private begging as the alternative to federal responsibility.

Your statement that the total blinded in the first world war had been well under 500 for both Great Britain and the United States is quite inaccurate. My good friend Lieut. Col. Sir Ian Fraser, chairman of St. Dunstan's, has many times stated that nearly 800 British and Empire service personnel were blinded in the period 1914-1918, and that there were approximately 2,200 more postwar cases of service connected blindness. And more than a year ago he reported 310 cases of service and civilian blinded in Britain in the present war, a figure in excess of Brigadier General Hillman's, and one now already considerably surpassed.

ALFRED ALLEN, Winnetka, Ill.
Secretary-General, American Association
of Workers for the Blind.

[NOTE.—The letter was referred to the Office of the Surgeon General, which submits the following comment.]

*To the Editor:*—The comments of Mr. Alfred Allen of the American Association of Workers for the Blind are carefully considered and most convincing. All are agreed that service personnel who lose their eyesight in the service of their country must have the very finest medical and surgical care and the very best opportunity for complete rehabilitation. We would believe, as was stated so ably in General Hillman's article, that the decision to employ guide dogs should not be made until the man has received a good bit of training himself. Whether it is proper for the soldier to receive a guide dog through a reputable private agency or whether it is better that the dog and the training be supplied by the federal government is a matter of opinion. Such opinions, moreover, are often related to political philosophy. Several guide dog agencies have agreed to provide a fully trained dog and the training for the man at no cost or at a nominal fee. It is true that only one of the guide dog agencies has in its agreement the provision of replacement of the dog without additional cost. It is believed, further, that the pension paid for blindness acquired as a result of military service is adequate to meet the usual expenses; it would not be fair to speak of "begging" in view of this fact.

As to the statistics of blindness in World War I, General Hillman's paper in the June 3 issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION reads as follows: "As a result of World War I France in 1922 had 2,200 blinded pensioners. Great Britain had slightly under 3,000." The present figures for blindness in Great Britain are not known. Some months ago the unofficial figure of 288 was reported to this office through a reliable source. We regret that we have no means at hand to give you accurate data for Great Britain's present problem.

# Medical Examinations and Licensure

## COMING EXAMINATIONS AND MEETINGS

### BOARDS OF MEDICAL EXAMINERS
### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, July 8, page 748.

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Aug. 7-9 and Nov. 13-15. Part III. Various centers, September or October. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Part I. Various centers, Jan. 19. Final date for filing application is Oct. 21. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, February. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 5-7. Los Angeles, January. Final date for filing application is Oct. 1. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I.* Chicago, Oct. 13-14. New Orleans, Sept. 29-30. New York, Oct. 6-7. San Francisco, Oct. 20-21. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Sept. 22. *Oral.* St. Louis, Nov. 8-9, New York, Dec. 13-16. Final date for filing application is Aug. 15. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: *Oral.* New York, December. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington 6, D. C.

AMERICAN BOARD OF SURGERY: *Written.* Part I. Various centers, October 25. Final date for filing application is August 15. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

# Bureau of Legal Medicine and Legislation

## MEDICOLEGAL ABSTRACTS

**Malpractice: Burns Inflicted in Taking Roentgenogram; Technician as Employee of Roentgenologist.**—McLaughlin went to the physician defendant, "an x-ray specialist," to have roentgenograms made of his teeth. The physician turned the patient over to a technician in his employ to take the indicated films. In accordance with the technician's instructions, the patient lay on a table, apparently under an "x-ray machine," held a piece of film behind a tooth with his thumb, and moved his head from side to side as the technician directed while the technician moved the machine to obtain the proper angle. According to the patient:

> In moving the machine over she hit me here on the finger—right here on that finger, and when she did the fire and the shock all occurred just at one time . . .

The shock seems to have thrown the patient off the table on to the floor and he received burns on his finger, arm and stomach, and his underclothing caught fire. The physician, so the patient testified in the suit he subsequently instituted against the physician, stated, in explaining the incident to him, that "the machine must have come in contact with his belt buckle or tie clasp." From a verdict and judgment of $2,000 in favor of the patient, the physician appealed to the Supreme Court of Arkansas.

The physician contended, first, that he was not liable for the negligence, if any, of the technician, relying on *Runyan* v. *Goodrum,* 147 Ark. 481, 228 S. W. 397, 13 A. L. R. 1403. In that case the physician-defendants, Drs. Runyan, Kirby and Sheppard, operated a hospital in which they maintained an x-ray department under the immediate supervision of a physician who was an "x-ray specialist," and this physician had a woman assistant who actually operated the x-ray machine. The plaintiff in that case was burned by the woman assistant and sued Drs. Runyan, Kirby and Sheppard. The physicians were held not to be liable for the negligence of the woman assistant of the "x-ray specialist" on the ground that the relation of master and servant did not exist between them and the woman assistant of the roentgenologist.

The Supreme Court, however, did not believe that the doctrine announced in the Runyan case could be applied to the facts in this case. In this case, said the Supreme Court, the physician is himself an "x-ray specialist" and is not a general practitioner, and the patient availed himself of his services because of his reputation for skill and knowledge as a roentgenologist. The patient did not know the technician and relied, not on her knowledge and skill, but on that of the physician. While the technician was doing the manual work of operating the x-ray machine, it appeared that the machine was separated from the part of the office in which the physician was at the time by a partition that did not entirely cut off the physician's view, and the technician was in sight of the physician while she was operating the x-ray machine. The proof established the relation of master and servant between the physician and the technician so as to render the physician liable for injury caused by the technician's negligence. As was said in Shearman and Redfield on Negligence, vol. 1, p. 350:

> It is an old and thoroughly established doctrine that, where the relation of master and servant exists, the master is responsible to third persons for injuries resulting from wrongful acts or omissions of a servant within the scope of his employment in the master's service.

And, again, in 48 C. J. 1137, this statement appears:

> A physician is responsible for an injury done to a patient through the want of proper skill and care in his assistant, apprentice, agent or employee.

The court also cited *Kelly* v. *Yount,* 338 Pa. 190, 12 A. (2d) 579, in which "an x-ray specialist" was held liable for injuries sustained by the negligence of his assistant, who was a skilled x-ray technician.

The physician contended next that there was no proof that any negligence on his part or on the part of his technician caused the patient's injuries. The technician testified that she was not standing by the table when the patient received the shock but that she was standing at a control cabinet about 6 feet away and that she did not cause the patient to receive the shock by moving the tube, as the patient testified. There was some testimony tending to show that it was improbable that the patient could have received a shock in this manner. The physician argued that the patient raised his hand up in some way about 14 inches and touched the tube, thereby causing the shock. The patient denied this and testified that the electric shock was caused by the technician pushing the tube against him. It was within the province of the jury, said the Supreme Court, to settle the conflict in the testimony, and the jury saw fit to accept the patient's version. Furthermore, it is not denied that the patient did receive an electric shock while he was on the physician's table and that the shock was caused in some manner by the x-ray machine. That being true, it did not devolve on the patient to show the exact cause of the injury. In *Kelly* v. *Yount,* previously cited, the Supreme Court of Pennsylvania, in discussing the rule as to the burden of proof in a case of this kind, said:

> When the thing which causes the injury is shown to be under the management of the defendants, and the accident is such, as in the ordinary course of things, does not happen if those who have the management use proper care, it affords reasonable evidence, in the absence of explanation by the defendants, that the accident arose from a want of care . . .

The court concluded, accordingly, that there was substantial evidence to support the finding of the jury that the patient's injury was caused by the negligent operation of the x-ray machine.

However, the court considered the damages awarded excessive and ordered the judgment reversed and the cause remanded for a new trial unless the patient would consent to a remittitur of $1,000.—*Gray v. McLaughlin, 179 S. W. (2d) 686 (Ark. 1944).*

# Society Proceedings

## COMING MEETINGS

National Medical Association, St. Louis, Aug. 14-17. Dr. John T. Givens, 1108 Church St., Norfolk, Va., Secretary.

Utah State Medical Association, Salt Lake City, August 24-26. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Heart Journal, St. Louis

**27:**433-610 (April) 1944. **Partial Index**

Reexamination of 4,994 Men Rejected for General Military Service Because of the Diagnosis of Cardiovascular Defects: Individual Reports by Chairmen of Special Medical Advisory Boards in Five Cities in Which the Combined Study Was Made. G. K. Fenn, W. J. Kerr, R. L. Levy, W. D. Stroud and P. D. White.—p. 435.
Detailed Analysis of Electrocardiograms of 500 Royal Canadian Air Force Aircrew. C. B. Stewart and G. W. Manning.—p. 502.
*Analysis of Electrocardiograms Obtained from 1,000 Young Healthy Aviators. A. Graybiel, R. A. McFarland, D. C. Gates and F. A. Webster.—p. 524.
Some Observations on Cardiovascular Examination for Aircrew Fitness. D. P. Murnaghan.—p. 550.
Cardiovascular Experiences in an Army General Hospital. R. R. Porter. —p. 559.
Cardiac Problems in Station Hospital. M. G. Brown.—p. 565.
Heart Diseases and Disorders as Causes for Evacuation from South Pacific Combat Area. H. B. Sprague and S. McGinn.—p. 568.
*Some Practical Aspects of Rheumatic Fever Problem Which Have an Important Bearing in Military Medicine. B. F. Massell and T. D. Jones.—p. 575.
Foreign Bodies In and About the Heart. E. F. Bland.—p. 588.
Cardiovascular System in Traumatic Shock. S. S. Kety and A. Pope. —p. 601.

**Electrocardiograms from Aviators.**—Graybiel and his associates present an analysis of electrocardiographic findings in 1,000 young aviators. This was a highly selected group of men between the ages of 20 and 30 years. None had cardiac defects on physical and x-ray examination. The electrocardiograms were taken with the subject recumbent and, with a few exceptions, in the basal state. The results emphasize great individual variations in the electrocardiographic pattern and a wide range of normal values. Even after rejecting as frankly abnormal some of the extreme values observed, it is apparent that the "normal" extends well into what has commonly been regarded as the abnormal range.

**Rheumatic Fever Problem.**—Massell and Jones call attention to the close relationship between epidemic hemolytic streptococcus infections and rheumatic fever and point out that rheumatic fever in a given population follows closely the epidemiology of hemolytic streptococcus infections. This pattern is so convincing that it forms the basis of prevention programs. These programs are discussed, with special emphasis on the careful study of respiratory infections from a bacteriologic point of view. Culturing, grouping and typing of such infections offer a key to the streptococcus problem. The use of sulfonamides prophylactically is discussed, and other preventive measures are mentioned.

### American J. Digestive Diseases, Fort Wayne, Ind.

**11:**141-172 (May) 1944

Endometriosis of Rectosigmoid: Report of Case with Review of Literature. S. Ben-Asher.—p. 141.
Direct Van Den Bergh Reaction in Mixtures of Normal and Jaundiced Serum. A. Cantarow.—p. 144.
Role of Fat Soluble Vitamins A and D in Nutrition. J. Buckstein. —p. 147.
Clinical and Radiologic Observations Concerning Large Pendulum Movement of Colon. A. Galambos.—p. 151.
Reflections on Geriatrics in Internal Medicine. M. Golob.—p. 159.
Changes in Liver Function Test During Sulfonamide Therapy. Marie A. Andersch.—p. 162.

### Delaware State Medical Journal, Wilmington

**16:**35-50 (March) 1944

Plastic Surgery of War Wounds and Burns. J. B. Brown.—p. 35.
Reconstructive Surgery of War Injuries. S. T. Snedecor.—p. 39.

### Endocrinology, Springfield, Ill.

**34:**215-300 (April) 1944

Relation of Age to Reactivity in Reproductive System of Rat. Dorothy Price and Evelina Ortiz.—p. 215.
Effect of Estrogens of Peripheral Blood and Bone Marrow of Mice. L. O. Jacobson.—p. 240.
Uptake of Radioactive Iodine by Thyroids of Rats Made Goitrous by Potassium Thiocyanate and by Thiouracil. R. W. Rawson, J. F. Tannheimer and W. Peacock.—p. 245.
Effect of Small Doses of Diethylstilbestrol on Anterior Hypophysis of Immature Rat. B. L. Baker and N. B. Everett.—p. 254.
Effect of Thiouracil on Formation of Thyroxine and Diiodotyrosine by Thyroid Gland of Rat with Radioactive Iodine as Indicator. A. L. Franklin, S. R. Lerner and I. L. Chaikoff.—p. 265.
Estrogen-Progesterone Induction of Sexual Receptivity in Spayed Female Mouse. J. R. Ring.—p. 269.
Effect of Light on Maturation and Estrous Cycle of Cotton Rat, Sigmodon Hispidus Hispidus. B. J. Meyer and R. K. Meyer.—p. 276.
Effect of Thiouracil on Iodine Content of Thyroid Gland. E. B. Astwood and Adele Bissell.—p. 282.

### Hawaii Medical Journal, Honolulu

**3:**109-154 (Jan.-Feb.) 1944

Early Diagnosis of Leprosy: As Seen in Hawaii. N. R. Sloan. —p. 111.
*"Kissing Bug Bites." H. L. Arnold Jr., and D. B. Bell.—p. 121.
Industrial Hygiene in Hawaii: Review of Industrial Hygiene Program of Board of Health. F. L. Schramm.—p. 123.
*Novocaine Injection for Low Back Strain. W. L. Argo.—p. 133.

**"Kissing Bug Bites."**—Arnold and Bell report the histories of 2 women who presented a clinical syndrome suggestive of cellulitis with lymphangitis and regional lymphadenitis. Both of them gave a history of being bitten by Triatoma rubofasciata, which belongs to the Reduviidae, whose habits are well described by the lay names of assassin bugs, cannibal bugs and pirate bugs. Their methods of attack may be inferred from the names Mexican bedbug, giant bedbug or kissing bug. The term "kissing bug" has reference to the fact that the bite is usually inflicted on exposed portions of sleeping victims, on the face, and particularly on the lips. The kiss is painless at the moment. It is only after the animal's withdrawal that itching and burning develop, and still later that the painful swelling supervenes along with lymphangitis and lymphadenitis. As suggested by the reviewed cases, shallow incision of the swollen bite site seems to have a favorable effect on the course of the symptoms. The bug's presence in Hawaii constitutes a public health hazard, since it is an important vector of American trypanosomiasis.

**Procaine Hydrochloride Injection for Low Back Strain.**—Argo says that one of the most troublesome problems encountered in the ambulatory patient, whether military or civilian, is that of low back pain following lumbosacral strain. This type of low back strain usually occurs in the ligaments which resist forward rotation of the upper sacrum: the lumbosacral, the interosseous sacroiliac and the short and long posterior sacroiliac ligaments. Some element of muscular and myofascial strain occurs coincidentally with the ligamentous damage, but in the light of physical examination of the patient it is felt that the clinical picture is referable almost entirely to the ligaments themselves. It has been shown by Badgley and by Steindler that the pain is due to irritation of sensory nerve endings in the ligaments involved. These structures are supplied by the posterior division of the spinal nerve. The most workable concept of the pain in these cases is that of referral, with afferent impulses originating in the damaged ligament being reflexly distributed to other postaxial nerve trunks. The traumatized ligament acts as a trigger point initiating discharge of the pain impulses. This concept is well borne out by symptoms usually presented by the patient and by subsequent disappearance of the pain following breaking of the reflex by local procaine hydrochloride injection as suggested by Kellgren and Steindler. The author describes the technic of injection and the manipulation carried out following it. In 25 of 34 cases treated by this method a single injection was sufficient to effect a cure, with no recurrence after six months of observation. In 4 instances injection was repeated the following day with cessation of symptoms; in 1, recurrence of symptoms after three weeks necessitated an additional injection. In 3 cases in which a rheumatic component was present injections were made for diagnostic purposes and were failures from a therapeutic standpoint.

## Indiana State Medical Assn. Journal, Indianapolis

**37**:225-278 (May) 1944

Glaucoma: Review of Symptoms. E. L. Van Buskirk.—p. 225.
Gonioscopy. B. J. Larkin.—p. 228.
Eye Accident Management. J. V. Cassady.—p. 230.
Role of Family Physician in Care of Ophthalmic Surgical Cases. C. P. Clark.—p. 232.
Tuberculosis and the Eye. H. B. Smith.—p. 233.
Epiphora. L. F. Swihart.—p. 236.
Spinal Anesthesia for Cesarean Section. Lillian B. Mueller.—p. 238.
*Specific Vaccine Therapy of Chronic Brucellosis. J. F. Griggs.—p. 241.

**Vaccine Therapy of Chronic Brucellosis.**—Griggs presents an analysis of 100 consecutive cases of chronic brucellosis which were treated with various brucella vaccines and filtrates. The usual forms of brucella vaccine therapy were complicated by the appearance of hypersensitivity in at least 25 per cent of the cases. The author made quantitative studies on the increase in hypersensitivity which is caused by tissue necrosis. He found that increasing hypersensitivity can be avoided and that desensitization is frequently possible if sufficiently minute doses of oxidized brucella vaccine are used (much less than 1 bacterium at first). Clinical improvement follows desensitization, even in stubborn cases which do not exhibit a high skin sensitivity. Desensitization and immunization have given encouraging results when done alternately and repeatedly in the same case. Good results have followed the various methods of specific vaccine therapy in 80 per cent of the cases. Since adopting the improvements reported in this paper, good results have been obtained in 85 to 95 per cent of 200 additional cases.

## Journal of Experimental Medicine, New York

**79**:463-558 (May) 1944

Studies on Lymphogranuloma Venereum: II. Association of Specific Toxins with Agents of Lymphogranuloma-Psittacosis Group. G. Rake and Helen P. Jones.—p. 463.
Titration of Influenza Virus in Chick Embryos. C. A. Knight.—p. 487.
Isolation from Normal Mice of Pneumotropic Virus Which Forms Elementary Bodies. Clara Nigg and M. D. Eaton.—p. 497.
Effect of Chemical Carcinogens on Virus-Induced Rabbit Papillomas. P. Rous and W. F. Friedewald.—p. 511.
Heterogenetic Antibodies in Acute Hepatitis. M. D. Eaton, W. D. Murphy and V. L. Hanford.—p. 539.

## Journal of Oral Surgery, Chicago

**2**:99-192 (April) 1944. **Partial Index**

Significance of Blood Dyscrasia in Oral Surgery. F. A. Henny.—p. 106.
Problems of Toxicity in Sulfonamide Therapy. R. H. Lyons and R. S. Van Harn.—p. 118.
Management of Early Acute Dentoalveolar Infections. B. B. Cook.—p. 128.
Further Studies on Effect of Prophylactic Use of Sulfathiazole and Sulfamerazine on Bacteremia Following Extraction of Teeth. P. M. Northrop and Mary C. Crowley.—p. 134.
Blood and Lymph Vessel Tumors Involving Mouth. D. H. Bellinger.—p. 141.
Nitrous Oxide-Oxygen Anesthesia in Office Practice. J. D. Sullivan.—p. 152.
Dry Socket Problem. V. H. Eman.—p. 158.
*Histoplasmosis: Report of Case. J. W. Kemper and H. J. Bloom.—p. 167.
Actinomycosis: Report of Cases. O. H. McConnell.—p. 173.
Ameloblastoma (Adamantinoma) of Mandible: Report of Case. R. O. Dingman.—p. 175.

**Histoplasmosis: Report of Case.**—A man aged 59 entered the hospital complaining of sores on the tongue and upper lip which had had their onset four months before. The lesions persisted throughout the period of hospitalization. Pharyngeal and laryngeal lesions of a similar character developed with hoarseness and cough. There was remittent septic fever, with excessive fatigue, weakness and loss of weight. All lesions were repeatedly submitted to biopsy. In sections stained by the Giemsa method numerous small yeastlike inclusions were noted chiefly in the reticuloendothelial cells. They could not be definitely identified. The close resemblance of the disease process to histoplasmosis was considered despite failure to substantiate it. The patient received iodides, bismuth, antimony and stibamine glucoside, in addition to sulfanilamide, sulfathiazole and sulfadiazine in full therapeutic dosage for trial periods. Germicidal and parasiticidal solutions were applied topically. The diet was heavily fortified with iron and vitamin concentrates. Radiation therapy was instituted, 900 roentgens being applied to the lip, face and neck fields. Death from cardiac failure ensued six months after the first admission and ten months after the onset of symptoms. Microscopic postmortem studies revealed Histoplasma capsulatum in the adventitia of the smaller blood vessels in the cortex of the brain and in a few mononuclear phagocytes in the leptomeninges. Histoplasma capsulatum was demonstrated in some mononuclear phagocytes in the granulation tissue of the lingual ulcer. An ulcer at the base of the epiglottis showed an occasional Histoplasma capsulatum organism in plasma cells, lymphocytes and giant cells. Many of the organisms were seen in the lymphocytes, plasma cells and large mononuclear phagocytes in the granulomatous tissue of the laryngeal mucosa. Large mononuclear phagocytes in the red pulp of the spleen contained Histoplasma capsulatum. The liver showed four bodies resembling Histoplasma capsulatum. Giemsa stained sections of the ureters showed two Histoplasma organisms.

## Journal of Pediatrics, St. Louis

**24**:371-482 (April) 1944

*Studies of Amino Acid Administration: II. Clinical Uses of an Enzymatic Digest of Casein. A. F. Hartmann, H. J. Lawler and C. S. Meeker.—p. 371.
Relation of Pancreatic Achylia to Meconium Ileus. S. Farber.—p. 387.
Polyneuritis of Unknown Etiology in Childhood. A. Hatoff.—p. 393.
Weight of Negro Infants. H. Bakwin and T. W. Patrick Jr.—p. 405.
*Influenzal Meningitis: Review of 15 Cases, with 2 Unusual Cases Reported in Detail. S. S. Lamm and B. H. Shulman.—p. 408.
Study of Serum Lipids in Celiac Syndrome. L. Luzzatti and A. E. Hansen.—p. 417.
Effect of Vitamin A on Reproduction in Dogs on Milk Diets. C. A. Elvehjem, J. E. Gonce Jr., and G. W. Newell.—p. 436.
Dermatopathic Lymphadenitis in Infantile Eczema. V. DePaul Larkin, P. A. DiSant Agnese and M. N. Richter.—p. 442.
*Double Ova Pregnancy in Which Rh+ Twin Developed Erythroblastosis. Edith L. Potter.—p. 449.
Epidemic of Common Infectious Jaundice. K. W. McLeod.—p. 454.

**Amino Acid Administration.**—Hartmann and his associates employed amino acids ("Amigen") prepared by digestion of casein with pork pancreas in the treatment of 300 patients. Amigen was usually combined with glucose or other solutions. These solutions were used in the treatment of dysentery, diarrhea, pyloric stenosis, intussusception, celiac syndrome, chronic glomerulonephritis, prematurity and many other conditions. Their use orally or parenterally prevents or reduces loss of body protein in children who are unable to derive adequate nutrition from natural foods taken by mouth. When used with glucose and vitamins it makes possible complete parenteral feeding over long periods, as has been shown in a case of tetanus. In combination with glucose and "buffer" solution it is of value in the resumption of enteral feedings in cases of intestinal irritation such as dysentery, "parenteral" diarrhea, peritonitis and postoperative conditions. In the presence of actively functioning kidneys its salt content makes it of some value in the maintenance of acid-base balance. To avoid undesirable reactions it is necessary to be aware of the following limitations: 1. The $p_H$ 6.5 solution is relatively more acid than the body's fluids and its parenteral use is not indicated in the presence of untreated acidosis and oliguria. 2. Solutions more concentrated than 3.5 per cent are hypertonic and may be locally irritating. This has not proved an obstacle to the subcutaneous use of more concentrated solutions. 3. Too rapid intravenous administration first produces a facial flush and a sensation of warmth, then a spreading flush over the body, nausea, vomiting and perhaps fever. To avoid this, a slow intravenous drip is recommended. 4. In infants the subcutaneous route is to be preferred to the intravenous one for these reasons: It is vastly easier technically, and the fluid is absorbed at a rate governed by the child's ability to handle it. 5. Concentrated solutions are absorbed rather slowly subcutaneously. 6. Severe dehydration or the presence of a very low plasma protein or a poor peripheral circulation after hydration is a contraindication to the subcutaneous administration of a solution of crystalloids such as the amigen-glucose mixtures.

**Influenzal Meningitis.**—Lamm and Shulman report 15 cases of Haemophilus influenzae meningitis treated in the pediatric wards of the Kings County Hospital and the Long Island College Hospital during the six year period from 1938 to 1943. Nine of the patients recovered. Of the 6 deaths, 2 occurred in patients who were in the hospital for but seven and fourteen hours, respectively. Most deaths occurred among children under 2 years of age. Two cases are reported in detail. In 1 of these

the condition was complicated by agranulocytosis, and in the other a relapse occurred after an apparent recovery. The latter case emphasizes the necessity of prolonged drug therapy. As soon as the diagnosis of H. influenzae meningitis was established by a gram-stained smear, blood culture spinal fluid culture or a positive Neufeld's quellung reaction with type specific anti-influenzal rabbit serum, the patients were started on intravenous injections of 5 per cent sodium sulfapyridine. The initial dose was from 2 to 3 Gm., depending on the child's age and weight. When the patients were able to retain oral medication, sulfapyridine was given in periodic maintenance doses. Blood counts and urine analyses were repeated every third or fourth day. Daily urine examinations and blood counts were made when there was evidence of drug toxicity. Within twenty-four hours after admission the patient received from 10 to 15 cc. of anti-influenzal rabbit serum after a negative intradermal skin test. The serum, diluted with isotonic solution of sodium chloride or isotonic solution of three chlorides, to which had been added 1:1,000 epinephrine, was given intravenously. Whenever the patient received adequate amounts of sulfapyridine with a poor response, the drug was changed. Sulfadiazine and sulfathiazole were used as alternates. All patients received frequent small blood transfusions during the critical phase of their illness. Chemotherapy was continued from two to three weeks after the blood and spinal fluid cultures became sterile and the clinical course of the patient was satisfactory, in order to avoid relapses.

**Double Ova Pregnancy in Which Rh+ Twin Developed Erythroblastosis.**—Potter reports that in May 1943 twins were born at the Chicago Lying-In Hospital to a normal woman aged 32 who had had one uneventful pregnancy nine years previously. The twins were males, the placentas and amniotic sacs were separate. One infant survived and was entirely normal; the other died of erythroblastosis on the second day of life. The mother has shown no anti Rh agglutinins but is OMN Rh−; the father, ON Rh+; the 9 year old daughter, O Rh+; the living infant, OMN Rh−; the dead infant, OMN Rh+. It is contended that the father was heterozygous for the Rh factor and that two ova were fertilized, one by a sperm carrying an Rh + gene and the other by a sperm carrying an Rh− gene. The Rh− mother had been sensitized to the Rh factor either in the previous pregnancy, when an Rh + fetus had been carried, or possibly during the course of this pregnancy by the Rh + twin. The antibodies produced in the mother passed through the placentas of both fetuses but affected only the one which was Rh +. The cells of the Rh + fetus contained the Rh antigen and could be agglutinated by the Rh antibodies; the cells of the Rh− fetus contained no antigen and therefore could not be agglutinated. The fetus whose cells were agglutinated developed erythroblastosis; the one whose cells were not agglutinated remained well.

## New England Journal of Medicine, Boston

**230**:477-500 (April 20) 1944

Papillomatosis of Larynx in Childhood: Report of 15 Cases. C. F. Ferguson and H. W. Scott Jr.—p. 477.
*Causalgia and Gangrene: Rare Complications in Meningococcal Meningitis: Report of Case. P. Bernstein.—p. 482.
Vomiting of an Open Safety Pin. E. B. Benedict.—p. 484.
Inhalation Therapy. M. S. Segal.—p. 485.

**Causalgia and Gangrene in Meningococcic Meningitis.**—Bernstein reports the history of a woman aged 34 who had cerebrospinal meningococcic meningitis. Two unusual complications were present, purpuric dry gangrene of the toes and scattered areas of the skin, and causalgia of the right upper extremity. These complications became manifest after the initial fulminating attack had subsided. The lesions caused protraction of disability for four months. That there was a common etiologic basis for these pathologic changes is uncertain and difficult to maintain. No stained slides demonstrating meningococci were made from either the skin or the toe lesions. The cause was probably a trophic disturbance based on a widespread vascular lesion produced by a peripheral thrombosis or by a peripheral vasospasm from an exotoxin. The pain associated with the gangrene was probably due to peripheral neuritis. The syndrome in the right arm may be attributed to causalgia. The paradox of severe pain in the arm and hand associated with only minor pathologic changes, and the uncertainty whether the etiologic factor was neurogenic, vascular or psychic, warrant a diagnosis of causalgia.

## Oklahoma State Medical Assn. Jour., Oklahoma City

**37**:93-142 (March) 1944

Surgical Indications in Glaucoma. D. V. Crane.—p. 93.
Clinical Importance of Refractive Errors. A. C. McFarling.—p. 96.

**37**:143-192 (April) 1944

Surgical Complications of Pregnancy and Their Management. G. Rogers. —p. 143.
Androgen Therapy in Female. J. W. Finch.—p. 149.
Anatomic Pathways for Metastatic Spread of Cancer of Breast. E. Lachman.—p. 153.
Caudal Anesthesia Catheter Method. L. C. Northrup and H. Orr. —p. 157.

## Rhode Island Medical Journal, Providence

**27**:153-204 (April) 1944

Observation on Beriberi. F. B. Cutts.—p. 161.
Common Cold: Reflectile Bodies as Diagnostic Aid. H. L. C. Weyler. —p. 163.

**27**:205-256 (May) 1944

Newer Developments in Clinical and Laboratory Aspects of Lymphogranuloma Venereum. C. H. Mann Jr.—p. 213.
Blood Transfusion and Blood Bank in Small Hospital. O. F. Smith. —p. 217.
An Intern Learns of Penicillin. C. M. Gordon.—p. 219.
Crooked Teeth. D. D. Osborn.—p. 220.

## Rocky Mountain Medical Journal, Denver

**41**:225-296 (April) 1944

*Preliminary Report on Clinical Use of Vitamin A in Treatment of Hypertension. A. Pond and A. M. Rosen.—p. 242.
In Selection of Medical Students What Makes a Good Doctor? A. C. Callister.—p. 245.
Peritoneoscopy. K. B. Castleton.—p. 247.
Employment of Women in Industry from Health Standpoint. L. E. Viko.—p. 251.

**Vitamin A in Treatment of Hypertension.**—Pond and Rosen administered 200,000 units of vitamin A daily to patients with essential hypertension, as suggested by Govea-Peña and Villaverde. There was a gradual fall in blood pressure of 10 patients. The majority of these responded favorably over long periods of time. There were no untoward reactions. Some investigators suggest that the fact that vitamin A in high dosage raises the urea clearance of dogs 40 per cent above normal may indicate that the vitamin may disturb the pathophysiologic pressor mechanisms produced by renal artery constriction. Another possibility is that the anti-hypertensive action of vitamin A may be totally unrelated to its specific vitamin effects and that one or more chemically related compounds with little or no vitamin action may prove to be more effective than vitamin A as hypotensive agents.

## War Medicine, Chicago

**5**:203-266 (April) 1944

Water Balance of Survivors of Shipwreck in Tropical Waters. P. H. Futcher, W. V. Consolazio and N. Pace.—p. 203.
Survey of Hemolytic Streptococcus Infections at Camp Borden, Ontario, 1943: I. Epidemiology. W. R. Feasby and E. T. Bynoe.—p. 207.
Id.: Clinical Features. W. R. Feasby.—p. 216.
New and Simple Instrument for Administration of Fluids Through Bone Marrow. H. Turkel and F. H. Bethell.—p. 222.
Study of Early Syphilis and Results of Treatment in United States Navy. G. H. Ekblad.—p. 226.
Factors in Recovery from Injuries to Head. J. Fetterman.—p. 232.
Congenital Heart Disease. N. G. Sloane and M. A. Mathias.—p. 238.

## Western J. Surg., Obst. & Gynecology, Portland, Ore.

**52**:139-196 (April) 1944

Normal and Hyperactive Ovary in Menstrual Cycle and in Hyperplasia. C. G. Hartman.—p. 139.
Maternity Leave and Maternity Care Practices in Industry. Charlotte Silverman.—p. 152.
Frog Test (Xenopus Laevis) for Pregnancy: Report on 1,000 Tests Over a Period of Four Years of Study. A. I. Weisman and Christopher W. Coates.—p. 171.
De Senectute (Marcus Tullius Cicero). F. Loomis.—p. 175.
Vagarics and Historical Backgrounds in Obstetrics. C. C. Schauffler. —p. 182.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Helvetica Medica Acta, Basel

**10**:729-830 (Dec.) 1943. **Partial Index**

*Influence of Gas Mask Respiration on Electrocardiogram and Circulation in Human Subjects. H. Schütz.—p. 739.
Suicide After Cranial Trauma. M. Maire.—p. 783.

**Influence of Gas Mask Respiration on Electrocardiogram and Circulation.**—Schütz investigated the influence exerted on the electrocardiographic record by breathing through a gas mask in 29 persons between the ages of 20 and 61. Gas mask respiration caused slight changes in all sections of the electrocardiographic curve. The electrocardiographic record taken during rest showed during mask breathing such changes as are observed during mild work. The exertion electrocardiograms differ little whether taken with or without a mask. There were no changes that indicated oxygen lack or coronary insufficiency. Of 15 persons the pulse frequency and blood pressure at rest under the mask indicated that mask respiration requires slightly more exertion than does ordinary breathing. After work tolerance tests the systolic blood pressure showed a considerable increase, but there were no indications of a deficient oxygen supply. Respiration was usually deeper and slower. The minute volume of the respiration during rest was studied on 10 persons with and without a gas mask. The majority showed an increase in the minute volume. Gas mask respiration forces the organism into compensating changes such as are caused by the accumulation of carbon dioxide. Under the gas mask the limits of the reserves will be reached sooner than without the mask. This involves increased dangers for those with coronary defects. Slow and deep respiration decreases the danger considerably because deepening the respiration has a much more economic effect than increasing its frequency.

### Praxis, Bern

**32**:661-674 (Sept. 16) 1943

*Promotion of Climatotherapy in Switzerland by Creation of Climatotherapeutic University Clinics. M. Petitpierre.—p. 661.

**Climatotherapy in Switzerland.**—The most important successes of high altitude climatotherapy in Switzerland in the last eighty years, according to Petitpierre, have been the open air treatment of pulmonary tuberculosis and heliotherapy of surgical tuberculosis. Climatotherapy is helpful in anemia, particularly when the anemia has impaired resistance. It is indicated in exhaustion due to overwork or infectious foci, in convalescence from serious illness or from surgical operations, and in pleurisy. Climatotherapy has proved valuable in malaria and other tropical diseases. Severe forms of influenza, particularly those accompanied by exhaustion and tachycardia, postpneumonic residual empyemas, dysentery, acute rheumatism, measles and whooping cough, are indications for high altitude climatotherapy. A large number of disorders of the endocrine glands, of the sympathetic nervous system and of allergy are likewise benefited. High altitude climate has a future in heart and vascular diseases. Hypertension of nonrenal origin is one of the indications. Neurasthenia is favorably influenced. Other conditions in which the high mountain climate is likely to be of benefit are osteomyelitis, postoperative empyemas, poorly healing ulcers and bone fractures, conditions in which the local defense powers are deficient. Exudative diathesis, rickets, psoriasis, furunculosis, chronic urticaria and allergic eczemas are favorably influenced. Climatotherapy presents many unsolved questions. The establishment of special clinics for the study of climatotherapy by the Swiss universities is desirable.

**32**:725-738 (Oct. 14) 1943

Increasing Capacity for Physical Exertion by Administration of Organic Phosphorus Compound. R. M. Du Pan.—p. 725.
*Heredity of Pelger's Nuclear Anomaly. H. R. Schinz.—p. 730.

**Heredity of Pelger's Nuclear Anomaly.**—Pelger of Holland discovered in 1928 a peculiar blood picture characterized by an abnormal form and structure of the nuclei of the leukocytes. Whereas in the blood of normal persons about 25 per cent of the neutrophils have nonsegmented or bisegmented nuclei and 75 per cent have nuclei with more numerous segmentations, in persons with "Pelger" blood plurisegmented nuclei are entirely missing. In 1932 Huët of Holland established a simple dominant heredity for this anomaly. Persons with Pelger's nuclear anomaly were discovered in many different countries. There are fluctuations in the manifestation of the condition: in persons with the complete Pelger anomaly there are no neutrophils with more than two segments in the nuclei; "half Pelgers" have a certain percentage of neutrophils with trisegmented nuclei. "Full Pelgers" and "half Pelgers" are heterozygotic carriers of the Pelger gene. Schinz points out that in 1939 the Pelger anomaly was discovered in rabbits. Among 400 rabbits, 1 was discovered with a blood picture that corresponded to the Pelger blood picture in human subjects. Breeding experiments revealed that in rabbits too the Pelger anomaly is transmitted as a simple dominant non-sex linked characteristic. The penetrating power of the Pelger gene is 100 per cent. Homozygotic Pelger animals were rare, apparently because of high mortality. When the homozygotic "hyper Pelgers" could be kept alive, it was found that the nuclei of all leukocytes were round and pyknotic; the animals showed extreme developmental retardation; their vitality was greatly reduced; their long tubular bones were shortened and curved. No hyper Pelgers have been observed among human subjects.

### Schweizerische Medizinische Wochenschrift, Basel

**73**:409-432 (April 3) 1943. **Partial Index**

Puberty and Disturbances of Puberty. H. Wissler.—p. 409.
Short Report of New Investigations on Anatomy of Vessels. E. Ludwig.—p. 413.
Phlegmons of Chest Wall After Bülau-Drainage of Pleural Empyema. L. Jeker.—p. 415.
Peptones and Lactic Acid in Therapy of Allergic Disturbances, with Particular Regard to Skin. F. Wyss-Chodat.—p. 417.
*Positive Mantoux Tuberculin Reaction in Differential Diagnosis of Active or Inactive Tuberculosis. H. Egli.—p. 420.
Dysentery Epidemic of Sonne-Kruse Type in Active Military Service. Zellweger.—p. 422.

**Mantoux Tuberculin Reaction.**—Egli used Mantoux's test for differential diagnosis of 40 doubtful cases of tuberculosis. Mantoux's method offers the possibility of injecting definite doses of tuberculin. Local, general and focal reactions may thus be prevented. A scheme of the employed phenol solutions of tuberculin is presented. Rise in temperature, depending on the extent of the activity of the tuberculous process, may be associated with a positive skin reaction manifested by a reddened area of 5 mm. or with the next concentrated dose and a local reaction in size from 10 to 30 mm. An eight days curve of temperatures taken prior to and after the tuberculin injection is required. The rise in temperature should be at least 0.3 degrees. Decrease in number of neutrophil leukocytes with rodlike nucleus revealed an obvious parallelism with the temperature test. The temperature test is positive in patients with definitely active tuberculous process. The temperature of convalescents is restored to normal at the same time at which the tuberculous focus becomes inactive. Positive temperature reaction does not occur in definitely healthy persons. In 90 per cent of the author's 40 cases the reliability of the temperature test was confirmed by roentgenologic examination, tomography, artificial pneumothorax, bronchoscopy, bronchography, culture of tubercle bacilli, animal inoculation and other laboratory methods.

### Actas Dermo-Sifilográficas, Madrid

**35**:107-202 (Nov.) 1943. **Partial Index**

*Verrucous Erythematous Lupus: Case. E. Ledo Dunipe.—p. 107.
Hemolysis, New Test. U. Dominguez.—p. 115.

**Verrucous Erythematous Lupus.**—According to Ledo Dunipe verrucous erythematous lupus is rare. He reports a case in a man of 33 in whom the disease manifested itself shortly after he had become a cow herder. The condition developed slowly, with bouts of aggravation and long remissions. The lesions occupied symmetrical areas near the mouth and on the cheeks, forehead, ears, neck, mastoid region, nose and hands and were intractable. There were hypotension and signs of hypothyroidism. Tests for syphilis and tuberculosis were repeatedly negative. The therapy consisted in injections of bismuth

hydroxide and of local application of solidified carbon dioxide. It was given in series of two weeks, each followed by intervals of two weeks of rest. Local pruritus, infiltration and hyperkeratosis disappeared. The lesions gradually faded, and the horny layer desquamated. After nine months of this therapy the lesions have largely disappeared. The appearance of the skin in the clean areas was that of the skin of very old cow keepers. The author believes that the associated causal factors in the reported case were (1) a constitutional predisposition, (2) an organic toxin and (3) a local irritation from prolonged exposure to the sun.

## An. Cáted. de Pat. y Clín. Tuberc., Buenos Aires

**4**:207-396 (Dec.) 1942. **Partial Index**

*Bone Marrow in Allergic Rhinopathies. S. F. Erdstein, J. C. Rey and J. A. Bertelli.—p. 284.
Thoracic Trauma and Pulmonary Tuberculosis. R. Cucchiani Acevedo.—p. 343.
Bilateral Recurrent Benign Spontaneous Pneumothorax: Etiopathogenesis. J. R. Paso and J. M. Leston.—p. 364.

**Bone Marrow in Allergic Rhinitis.**—Erdstein and his collaborators report observations on 16 patients with allergic rhinopathies. The etiologic diagnosis of allergic rhinopathies is difficult. Eosinophilia in the peripheral blood and accumulation of eosinophils in the nasal secretion are not constant findings. An allergic reaction of the bone marrow of the type encountered in all allergic diseases is also encountered in allergic rhinopathies. It consists of an intense local eosinophilia with deviation to the left of the eosinophils, predominance of myelocytes and promyelocytes over that of normal leukocytes, increase in monocytes and plasma cells and phenomena of local toxicity, nuclear irritation, plasma basophilia, vacuolation and coarse granulation. The degree and acuteness of the bone marrow changes vary, but the reaction is present in all cases both during the course of the allergic disease and in the periods of improvement. The bone marrow reaction is of value for the pathogenic diagnosis of allergic rhinopathies as well as for the differential diagnosis of the various types of allergic rhinitis from spasmodic rhinitis and other types of the disease.

## An. Disp. Púb. Nac. p. Enf. d. Ap. Dig., Buenos Aires

**6**:1-844 (1943). **Partial Index**

Relations Between Angina Pectoris and Diseases of Digestive Apparatus. R. A. Bullrich.—p. 169.
*Gigantic Ulcers of Stomach. C. Bonorino Peró, B. D'Alotto and H. D. Repetto.—p. 645.
Gastroduodenal Ulcers in Children. O. Copello.—p. 811.

**Extensive Ulcers of Stomach.**—Bonorino Peró and his collaborators encountered extensive ulceration of the stomach in 18 out of 1,600 patients with gastroduodenal ulcers. The majority of these patients complained of lack of appetite and loss of weight. The ulcers presented irregular borders in roentgenograms and exceeded 4 centimeters in size. The nature of the ulceration and the therapeutic indications were determined by the therapeutic test, which consisted in putting the patient to bed, a proper diet, antispasmodics and vitamin C. Progressive clinical improvement and diminution of the niche in the roentgenogram indicated a benign ulcer and continuation of medical therapy. Failure of the test suggested cancer and called for surgical intervention. The authors found that cancer is more frequent in niches of the horizontal part of the lesser curvature than of the vertical part of the lesser curvature. Lack of appetite, progressive loss of weight, large size of the niche and irregular borders are of no differential value as between malignant and benign lesions. The therapeutic test is of value in the differential diagnosis and as an indication of the proper therapy.

## Boletín de la Soc. Cubana de Pediatría, Havana

**15**:759-1176 (Dec.) 1943. **Partial Index**

*Blood Corpuscles in Nutritional Edema in Infants. C. Torres Umaña.—p. 775.
*Familial Chronic Malignant Neutropenia with Atypical Granulations of Leukocytes. A. Béguez César.—p. 900.

**Blood Corpuscles in Nutritional Edema.**—Torres Umaña observed 39 infants with nutritional edema. Hypochromic anemia, moderate leukopenia and a diminution in the number of the blood platelets, of blood albumins and hemoglobin was encountered in all cases. Some patients presented hemorrhages of the oral mucosa which simulated stomatitis or purpura. The 12 patients with purpura had the lowest figures for blood platelets, with a grave prognosis. Mucosal hemorrhages and purpura paralleled the course of nutritional edema and were controlled in early cases by a diet rich in animal albumins. When nutritional edema runs a favorable course, the blood platelets increase up to normal figures. Purpura of nutritional edema is due to diminution in the number of blood platelets and hemoglobin caused by the insufficient amount of protein in the blood.

**Familial Chronic Malignant Neutropenia.**—The reports by Béguez César are the first of the type to be published. The family of 13 children was the offspring of a married couple of apparently normal and healthy persons. All the children were born at full term by normal deliveries. Nine patients were normal. Four were albinos and exhibited nystagmus. From the age of 2 years the patients began to suffer recurrent febrile attacks of a catarrhal rhinopharyngitis and moderate enlargement of the inguinal, axillary and cervical lymph nodes. The hemogram showed chronic neutropenia, leukopenia, lymphomonocytosis and atypical granulations in the leukocytes. The latter were of a type not previously described. They were encountered in the leukocytes of the father's blood and of all the 13 children but not in those of the mother and her family. The Paul and Bunnel tests for monocytic angina were positive in the patients. The early attacks were controlled by antianemic and anti-infectious therapy, blood transfusions from one of the maternal uncles and a proper diet. The final stage, which occurred between the ages of 4 and 5 years, was of the malignant neutropenia type. The disease is a familial form of malignant neutropenia with atypical granulations of the leukocytes, transmitted by the father and which will probably be transmitted by some of the children.

## Obstetetricia y Ginec. Lat.-Americanas, Buenos Aires

**2**:1-88 (Jan.) 1944. **Partial Index**

*Virusidal Infections of Female Genital Organs. W. E. Coutts, I. Brieva, J. Lerner and A. Said.—p. 9.
Dynamic Indications of Cesarean Section. R. Dubrovsky.—p. 22.
Diameters Used in X-Ray Measurements of Female Bone Pelvis. J. León and J. A. Salaber.—p. 55.

**Virusidal Infections of Female Genital Organs.**—Coutts and his collaborators found that viruses of herpes, nasobuccopharyngeal infections (Broadhurst), inclusion conjunctivitis (Halberstaedter-Thygenson) and lymphogranuloma venereum are frequent causal agents of virusidal vulvitis, vaginitis and cervicitis. Gynecologic virusidal infections do not react to sulfonamide therapy. A diagnosis can be made from the presence of cytoplasmic, nuclear and tissue inclusions which can be identified in stained vaginal smears or by a biopsy. The differential diagnosis of genital virus infection by the virus of either lymphogranuloma venereum or follicular inclusion conjunctivitis can be established by the results of a skin test in which specific antigens are used. An associated infection may be present.

## Revista de la Policlinica Caracas, Caracas

**12**:323-384 (Nov.-Dec.) 1943. **Partial Index**

Leukemia and Pregnancy. A. van der Sar and P. H. Hartz.—p. 325.
*Arterial Fat Embolism: Experiments. H. Cedeño Pérez.—p. 340.

**Arterial Fat Embolism.**—Cedeño Pérez injected sterile olive oil into the renal artery in one group of dogs and into the carotid artery of another group. The dose of oil injected into the renal artery varied from 1 to 2 cc., and of 1 to 10 cc. into the carotid artery. The animals did not manifest general disorders or paralysis. Spontaneous death did not occur during the experiment. The animals were killed at periods varying from ten minutes to fifty days after the injection. The kidneys and lungs of the animals of the first group and the brain and lungs of the second group did not show microscopic lesions of importance. The injected oil passed rapidly (in fifteen minutes) from the renal capillaries into the pulmonary capillaries and still more rapidly (in ten minutes) from the cerebral capillaries into the pulmonary capillaries. The fat accumulated in the

capillaries of the lung was slowly absorbed. The author concludes that arterial fat embolism is not necessarily fatal. It does not produce important lesions. The type of clinical and microscopic reaction produced by fat embolism does not depend on the velocity of the injection of the oil.

## Revista Médica de Rosario, Rosario

**33**:1097-1174 (Dec.) 1943. **Partial Index**

Value of Takata Reaction and of Its Modifications. A. B. Arroyo. —p. 1097.
*Hematochromatosis: Case. J. N. Marin and J. F. Ganem.—p. 1126.

**Hematochromatosis.**—Marin and Ganem report the case of a man 33 years of age, in whom an attack of an acute gastrointestinal disorder was followed by progressive hepatomegaly. A biopsy of the liver taken in the course of an exploratory laparotomy showed that the organ contained a large amount of iron pigment. Diabetes refractory to insulin therapy, asthenia, hypotension, sexual frigidity and progressive emaciation followed. Hematochromatosis appears to be a disorder of iron metabolism in the course of which the cells and tissues of certain organs, especially of the liver, pancreas and endocrine glands, are transformed into depots of iron-containing pigment. Destruction of the pigmented tissues and cells and formation of scar tissue follows. Heredity and a familial predisposition seem to play a role.

## Semana Médica, Buenos Aires

**51**:417-468 (March 2) 1944. **Partial Index**

*Typhoid Intestinal Perforation in Children. A. Invaldi.—p. 417.
Postabortion Suppurated Pelvicellulitis: Therapy by Drainage, Posterior Colpotomy and Azosulfamide Lavages. L. Fasce.—p. 444.

**Typhoid Intestinal Perforation.**—Invaldi reports 298 cases of typhoid in children. Intestinal perforation occurred in 10 children whose disease was of the grave type. The patients had good hygienic care and a diet of milk and decoctions. Perforation occurred at the level of the ileum during the third week of the disease. The symptoms were sudden pain in the right iliac fossa, which became diffuse over the abdomen within a few hours, abdominal tenderness, vomiting, obliteration of liver dulness, and tenderness in the Douglas pouch on rectal palpation. Increased virulence of Eberthella typhosa in certain epidemics is responsible for the occurrence of intestinal perforation. The therapy consists of earliest intervention with suture of the perforations. A single perforation was encountered in 8 patients, three perforations in 1 and four in another. Two patients operated on within six hours of perforation recovered, whereas 6 patients operated on after the six hour lapse died.

**51**:469-520 (March 9) 1944. **Partial Index**

Cerebral Hemorrhage: Physiopathologic and Therapeutic Study. J. Barbosa.—p. 469.
Demerol in Parkinsonism. L. Curia.—p. 501.
*Blood Groups in Acute Anterior Poliomyelitis. E. Sujoy and H. Allemand.—p. 476.

**Blood Groups in Acute Anterior Poliomyelitis.**—Sujoy and Allemand made determinations of blood groups in 150 children with acute anterior poliomyelitis in the course of an epidemic. The majority of the patients were under 5 years of age. Sixty-five children (43 per cent) belonged to the O group, 59 (39 per cent) to the A group, 21 (14 per cent) to the B group and 5 (3 per cent) to the AB group. The author concludes that there is no relationship between a given blood group and immunity to acute anterior poliomyelitis. The theory that immunity to poliomyelitis is greater in children of the B group than in those of any other group is not justified.

## Klinische Wochenschrift, Berlin

**21**:765-784 (Aug. 29) 1942

Shock and Collapse. H. Schwiegk.—p. 765.
*Treatment of Fat Embolism with Oxygen Inhalation. H. von Brücke. —p. 771.
*Onset and Course of Weil-Felix Reaction During First Ten Weeks of Typhus. F. Schütz and T. Messerschmidt.—p. 772.
*Types of Diphtheria Bacilli as Separate Pathogenic and Epidemiologic Entities. H. Grossmann.—p. 774.
Dissociated Icterus. J. Takó.—p. 776.

**Treatment of Fat Embolism with Oxygen Inhalation.**—According to von Brücke, passage of fat into the blood stream is a frequent accompaniment of fractures in adults. Blood and urine of patients with fractures contain fat droplets even in the absence of clinical signs. If large quantities of fat enter the blood stream, pulmonary capillaries may become blocked with fat droplets, with resulting pulmonary fat embolism. There is also a cerebral form of fat embolism. Fat embolism plays a part in the pathogenesis of traumatic shock, for in fatal cases of shock after bone fractures considerable quantities of fat are often found in the pulmonary vessels. The therapy of fat embolism is still unsatisfactory. The efficacy of oxygen inhalation in the treatment of pneumonias induced the author to try this measure in the treatment of a young man with pulmonary fat embolism following fracture of the femur. Various circulatory remedies and a blood transfusion were without effect, and the patient's life seemed in danger. After a few minutes of oxygen respiration the color improved, the breathing became deeper and more quiet and the pulse improved. When the oxygen was withdrawn, the condition became worse again and oxygen respiration was resumed. At the end of twenty-four hours the patient's condition was greatly improved. During the following two days the patient breathed oxygen interruptedly.

**Weil-Felix Reaction in Typhus.**—Schütz and Messerschmidt point out that the Weil-Felix reaction is of great value in the diagnosis of typhus, particularly in its differentiation from typhoid. It seemed of interest to investigate to what titer limit the typhus serum would agglutinate proteus X 19 bacteria, in which stage of the disease the agglutination titer would be highest and in what manner it would subside. Blood specimens from typhus patients were examined in two different laboratories. In some instances as many as 20 specimens were examined, but the average was 4 or 5 tests in 1 case. The examinations were made between the first and the forty-second day of the disease. Agglutination was considered positive with a marginal value of 1:200 or 1:400. When 1:200 was accepted as the limit, the reaction was positive on the third day in 30 per cent of the cases, on the fourth day in 48 per cent, on the fifth day in 59 per cent, on the seventh day in 65 per cent, during the second week in 91 per cent and during the third week in 99 per cent of the cases. The results are similar when a marginal value of 1:400 is taken as the basis, except that the incidence of positivity is slightly lower. The maximum height of the titer differs in individual patients. Occasionally values of 1:100,000 were reached. The decrease of the titer may be irregular. No satisfactory explanation has been found for these fluctuations. Intercurrent disorders such as colds sometimes caused a temporary renewed increase in the titer. However, if an infection such as a thrombophlebitis greatly depleted the defense powers of the organism, the titer of the Weil-Felix reaction decreased likewise. The reaction became rarely negative again during ten weeks of observation following the onset of typhus.

**Types of Diphtheria Bacilli as Separate Pathogenic and Epidemiologic Groups.**—Grossmann says that the designation of the types of the diphtheria bacilli as "gravis," "intermedius" and "mitis" was based originally on clinical observations. Later investigators found that the gravis and mitis types do not necessarily correspond to severe and mild courses of the disease and suggested that these type designations be discontinued in favor of the classification types I, II and III. This suggestion was not widely accepted. The author feels that the question cannot be regarded as settled, since the separate pathogenic position of the gravis, intermedius and mitis types may still be relatively correct. The epidemiologic distinctness of the types has also been challenged. Grossmann presents investigations on these problems which he carried out during the years between 1938 and 1940 in 425 cases of diphtheria. He found that the gravis type of the diphtheria bacillus was the one most frequently present in mild cases, but in the severe and in the fatal cases it was also found more frequently than the other two. In separating the clinical pictures and also considering the type of bacillus, it was found that the gravis type was responsible for the majority of severe cases of diphtheria, the type mitis for most of the mild cases and the type intermedius for the majority of the moderately severe cases. Thus the pathogenic distinctness of the types was relatively maintained.

# Book Notices

**Oral Histology and Embryology.** Edited by Balint Orban. Cloth. Price, $6.50. Pp. 342, with 262 illustrations. St. Louis: C. V. Mosby Company, 1944.

This is unique among textbooks in that it is written by a number of teachers and investigators in oral histology who collaborated not only by preparing the first drafts for their individual chapter assignments but also by discussing, editing and revising every other chapter. It may therefore be considered to be a careful cross section of the present day views on the various problems in the active field of oral histology and embryology in which different interpretations naturally have arisen in proportion to the rapidity of the advance of this field of knowledge.

The book opens with a discussion of the development of the face and oral cavity, which is supplemented by a number of illustrations including an excellent two page colored plate. Chapter II is concerned with tooth development and lays greater stress on developmental physiology than is usually offered in histologic presentations. The morphologic stages are analyzed in terms of the physiologic processes which they represent and are vitalized by a discussion of the developmental aberrations to which they may give rise.

Chapter III deals with the complex problems of the microscopic structure and development of the enamel. It is the longest chapter and probably the one that gave the collaborators and the editor the greatest challenge. It includes a detailed consideration of the life cycle of the ameloblast, a summary of the latest chemical findings on the calcification of the enamel and a discussion of the submicroscopic structure as revealed by studies in polarized light. This chapter is richly illustrated (one illustration for each page). The chapter on the pulp is excellent and is of special current interest in view of the delicate reactivity of the pulp to changes in atmospheric pressure during flying.

Other chapters cover the fields of dentin, cementum, periodontal membrane, maxilla and mandible, gingival sulcus and epithelial attachment, eruption, shedding of deciduous teeth and oral mucous membrane.

Chapters of special interest and not usually included in histology textbooks deal with the temporomandibular joint, maxillary sinus and glands of the oral cavity. The last chapter deals with histologic technic and includes special methods for the study of the organic structure of the enamel.

A number of the illustrations are of full page size. Some are diagrammatic and help the interpretation of the photomicrographs. In addition there are nine tables which help to summarize and classify some of the facts presented.

The text shows evidence of unremitting care and attention. The technical composition of the book is good. Reading and reference are facilitated by heavy type headings and side headings. Each chapter concludes with a special section on the clinical application of basic histologic data and a selected list of references.

This textbook will be of help not only to the dental student and practitioner but also to the medical student and the physician who is interested in understanding the biologic basis for current theories and various clinical procedures.

**Medical Care of the Discharged Hospital Patient.** By Frode Jensen, M.D., Instructor in Medicine, Syracuse University College of Medicine, Syracuse, New York, H. G. Weiskotten, M.D., Dean and Professor of Pathology, Syracuse University College of Medicine, and Margaret A. Thomas, M.A. Cloth. Price, $1. Pp. 94. New York: Commonwealth Fund; London: Oxford University Press, 1944.

This publication reports a study dealing with the problem of providing improved medical care for hospitalized chronically ill patients, and a method of early discharge of ward patients at the University Hospital, Syracuse, N. Y., with follow-up care in the home by a staff physician is described. The need for continuity of medical supervision of patients discharged was shown by the fact that 84.1 per cent of all patients admitted to the medical wards during the period of the study (July 1, 1940 to Feb. 1, 1942) were suffering from chronic disease, and about one third of these had degenerative cardiovascular disease.

Only 59.3 per cent of patients discharged to their private physicians reported to them unless some special step was taken. Likewise only 23.2 per cent discharged to the outpatient department reported without follow-up. Excessively long periods of hospital care were called for by those patients discharged without referral to private physicians or the clinic.

To study and remedy this situation one of the authors (F. J.) was appointed as extramural resident. Appropriate follow-up in the home was provided for those referred out for further care. For those who were merely discharged home visits were made, and medical treatment as indicated was given in the home by the extramural resident. The percentage of patients who then consulted their private physicians was raised to 78.8, and those returning to the clinic increased to 84.2.

The Home Care Group offered unusual opportunities for coordinating good medical care with the needs of individual patients. Of 165 patients so treated, it is reported that 7,268 days of hospital care at a cost of $29,072 were saved, independent of the value of the service to the patient. This sum, saved by the services of the Extramural Resident, was three times the total cost of the experiment. What may be of even greater significance is the fact that, by extending the hospital service to include care in the home for but 165 ward patients, beds were made available to serve a possible additional 302 patients with average hospital stays of twenty-four days each.

It is concluded by the authors that the provision of home care for discharged medically needy patients is one further step toward a more economical and beneficial use of the hospital in the care of the indigent.

This short presentation of a study in a field badly in need of suggestions offers interesting and challenging material for further consideration.

**Childbirth Without Fear: The Principles and Practice of Natural Childbirth.** By Grantly Dick Read, M.A., M.D. Cloth. Price, $2.75. Pp. 259. New York & London: Harper & Brothers, 1944.

This book was published in England under the title "Revelation of Childbirth." The thesis that Read expounds is that human reproduction is a normal, natural, biologic process. Pregnancy and labor should be conducted in this light. Pain associated with labor is the result of fear engendered by generations of ignorance, misconception and false teaching. The fear of parturition has become the great disturber of the neuromuscular mechanism of labor.

The author removes the pain associated with labor by the elimination of fear. Education during the antepartum period is directed toward impressing the pregnant woman to regard labor as a normal, biologic process devoid of all pain and discomfort. Anxiety is avoided by a careful explanation of all the facts which enter into normal pregnancy and labor. As an adjuvant to this peace of mind, she is taught to relax by systematic exercises introduced at the fourth or fifth month and continued to term.

Labor is conducted as naturally as possible. During the second stage the patient has access to inhalation anesthesia but, if her education has been complete, she will not resort to it. Rubbing of the back and pressure on the sacrum will provide some relief at this period. The relative anesthesia of the perineum which makes it possible for the author to repair superficial tears without anesthesia is due to the trauma to which the perineum has been subjected rather than to the exalted state of the patient at the birth of the baby, as the author suggests. Abnormal or surgical deliveries require anesthesia because real physical pain is induced by laceration and excessive stretching of the birth canal.

There is an excellent lesson in this book for obstetricians and students of reproduction. It is thought provoking as well as interesting to read. Emotional influences do play a profound role in the physiology of reproduction. Pregnancy and labor have come to be regarded as pathologic states. Few women in our large maternities deliver naturally. However, pain relief is here to stay even though the ideal analgesic agent has not been found. In spite of the conversion of a physiologic function into a pathologic state, pregnancy and labor have become increasingly more safe for our mothers and our babies.

The author dedicates this monograph to the late Joseph B. De Lee, a fellow crusader in the interests of safer motherhood, for his kindly interest in his work and his personal friendliness and appreciation.

**Female Endocrinology Including Sections on the Male.** By Jacob Hoffman, A.B., M.D., Demonstrator in Gynecology, Jefferson Medical College, Philadelphia. Cloth. Price, $10. Pp. 788, with 181 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

The author set out to give his readers a concise, simple and clear exposition of endocrinology, avoiding the purely speculative and ill founded concepts and emphasizing the sounder views. In this he has succeeded admirably. The book concerns itself not only with the clinical aspects of gonadal and reproductive endocrinology but also with a discussion of the fundamentals of glandular physiology.

In the clinical material, particularly, emphasis is placed on disturbances of functional origin because those make up by far the largest part of all endocrine disorders. Throughout the discussions there is abundant evidence of the author's conservative and critical attitude in the management of endocrine disorders. Likewise, whereas he recounts the vast amount of data derived from animal experimentation, he recognizes the wide gap which exists between laboratory animals and man and therefore he uses great caution in drawing inferences from laboratory research. Laboratory tests and diagnostic aid of other kinds are given in detail for both normal and abnormal patients, and their limitations are pointed out.

The book includes an exhaustive and critical review of the literature on endocrinology. An extensive bibliography is added to each chapter, and at the end of the book is an invaluable bibliographic index which occupies almost thirty pages of double columns. In this index is included every article which is of any importance in the field of endocrinology. For his critical analysis of the vast literature which has accumulated in the last few years, the author deserves special praise because this is a long, time consuming and difficult task. For this job the author is eminently fitted, because he has made many valuable contributions to the field of endocrinology.

The book is written in a style easy to read. The illustrations are abundant and highly instructive. The author is to be highly congratulated on having written one of the best and most useful textbooks on the subject of endocrinology in any language. Likewise the publishers deserve great credit for having done their part magnificently because the paper is excellent, the type is clear and the illustrations have been beautifully reproduced. All in all, this book, which is a treasure house of information, should be in the library of every gynecologist, urologist, laboratory technician and general practitioner.

**Supplement to The Extra Pharmacopeia. Martindale, Twenty-Second Edition, Volume I.** Published by direction of the Council of the Pharmaceutical Society of Great Britain. Paper. Price, 2s. Pp. 48. London: Pharmaceutical Press, 1943.

The Extra Pharmacopeia, which is published under the supervision of the Council of the Pharmaceutical Society of Great Britain, is widely known. The supplement to volume I, twenty-second edition, contains a summary of changes made in the addenda to the British Pharmacopeia (1932), additions and deletions to the British Pharmaceutical Codex (1934), preparations of the National War Formulary (1943), articles added to and deleted from U. S. P. XII and N. F. VII, some orders in England affecting supplies of drugs, a list with brief description of some new proprietary names not included in volume I, and a few names approved by the General Medical Council for substances of British manufacture which have hitherto been known by other names.

**The Story of the First Fifty Years of The Mount Sinai Hospital, 1852-1902.** Cloth. Pp. 92, with illustrations. New York, 1944.

This book describes and documents in chronologic sequence the story of the formative years of the Mount Sinai Hospital, New York City, from 1852 to 1870, and the subsequent growth and development from 1870 to 1902. A third section is now in preparation and will be published in the *Journal of the Mount Sinai Hospital* as the material becomes available. It is hoped that these reports will also be supplied in book form to complete the historical record of a period of ninety-two years of distinguished hospital service. The book is an interesting narrative of hospital events so written as to reflect the course of medicine in the latter half of the nineteenth century. It introduces many of the prominent physicians of the early period and describes their work and influence in shaping the medical traditions of Mount Sinai Hospital. Included are many items of special interest in relation to the early history of New York City, its growth and development, the hospital in the Civil War period, character of nursing seryice, public attitude toward postmortem examination and surgery as practiced in the transitional period of anesthesia and surgical antisepsis. Physicians and hospital personnel will find that this volume yields interesting and profitable reading.

**Elcmenty mysli: Sbornik izbrannykh statey.** [By] I. M. Sechenov. [Elements of Thought Processes.] Paper. Price, 9 rubles, 50 kopecks. Pp. 222. Moskva & Leningrad: Izdatelstvo Akademii Nauk SSSR, 1943.

Sechenov, founder of Russian physiology, was first to attempt investigation of the sphere of consciousness by physiologic methods. He postulated that the thinking process is of reflex nature and that psychic activity of man is therefore susceptible to objective study. He believed that the external world plays an important role in the existence of the living organism. The content of our psychic life is the reflection of the material world in special types of apperceptions, images and concepts. Nearness, distance and height of objects, direction and rapidity of movements are products of our muscle sense. This sense, manifesting itself in periodic movements, becomes the fractional analyzer of space and time. Our numerical concepts stem from the same source. The volume at hand presents a collection of essays by the great physiologist dealing with the development of his central thesis, which is the reflex nature of the process of thinking. The chapters are designated as (1) who is to investigate psychology and how? (2) impressions and reality, (3) elements of the thinking process, (4) objective thought and reality and (5) objective thinking regarded from a physiologic point of view. The volume is one of the scientific-popular series published by the Russian Academy of Sciences. The volume should prove of particular interest to neurophysiologists and to psychologists. It is to be regretted that there are no summaries in English or French.

**Introduction to Microorganisms.** By LaVerne Ruth Thompson, R.N., M.A., M.S. in Public Health, Instructor of Microbiology, Division of Nursing Education, Teachers College, Columbia University, New York. Cloth. Price, $2.75. Pp. 445, with 54 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

This book is truly entitled "an introduction" and as such can be read by any one with a good high school education. The volume could serve as a supplement to advanced high school or beginning college courses in biology; it may be helpful in introducing the subject to nurses; it will be useful also to any intelligent reader who is anxious to develop or extend an elementary knowledge of biology. The method of presentation employed is rather unusual but its principal feature is the care which has been given to retain accuracy against a background of readily understandable scientific language.

**Social and Psychological Factors Affecting Fertility. II: Variations in the Size of Completed Families of 6,551 Native-White Couples in Indianapolis.** By Clyde V. Kiser and P. K. Whelpton. Reprinted from The Milbank Memorial Fund Quarterly, Vol. XXII, No. 1, January 1944. Paper. Pp. 61-94. New York: Milbank Memorial Fund, 1944.

This pamphlet contains an analysis based on household surveys conducted in Indianapolis of 6,551 native white couples of virtually completed fertility. It is concerned with the distribution and number of live births as related to possible associated factors. The percentage of childlessness, the part played by religion, the relation of family size to rental value and educational attainment and other factors were included. The subject is related to numerous important social and economic problems.

**Estudios de histofisiología e histofisiopatología tiroideo.** Por Washington Buño, profesor titular de histología y embriología de la Facultad de medicina, Montevideo. Paper. Pp. 200, with 96 illustrations. Buenos Aires: Editor "El Ateneo," 1943.

This book represents a review on the correlation between histologic and histopathologic pictures of the thyroid gland and its function. The author has made no attempt to present new material or original concepts. The main value of the book lies on the presentation of a fairly well selected literature on the anatomic changes of the thyroid gland in pathologic conditions. The reproduction of the histologic slides is, as a rule, excellent.

# Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

## INTRAVENOUS INJECTION OF FLUIDS AND THROMBOPHLEBITIS

***To the Editor:***—**Has there been any evidence to indicate that the intravenous administration of fluids into the leg veins may be a factor in the production of thrombophlebitis and embolism? Has there been any evidence to indicate that the posture of a patient on the operating table, particularly the Trendelenburg position, might influence the production of thrombophlebitis and embolism? If dicumarol is to be used as a prophylactic measure to reduce the possibility of embolism and thrombophlebitis, has anyone outlined a dosage scale to be used in what relation to the date of operation and in what cases should it be used.**

**Major, M. C., Washington, D. C.**

ANSWER.—

[This question has been referred to two qualified consultants, whose respective replies follow.—ED.]

1. Intravenous administration of fluids, provided they are isotonic, hardly ever produces thrombosis in the veins of the legs; it is obvious, however, that with many patients harboring small subclinical thrombi in the superficial and perforating veins of the calves a preexisting thrombosis can be stirred up and extended. For this reason, especially in older persons, the use of the veins of the dorsum of the hand or the elbow is preferable; it is known, of course, that thrombosis may occur even in the upper extremities.

Certain postures on the operating table definitely add to the hazards of thrombosis; one of these is the lithotomy position, producing acute angulation of the popliteal vein. The Trendelenburg position accelerates blood flow from the lower extremities and is an excellent method for the prevention of postoperative thrombosis. It certainly does not contribute to stasis and the formation of thrombi.

The use of dicumarol for prophylaxis against postoperative thrombosis and embolism has been reported several times. Butsch and Stewart (*Arch. Surg.* **45**:551 [Oct.] 1942) administered the drug to 23 men one to two days before herniorrhaphy. Excessive bleeding was not encountered, and healing was not delayed. Barker, Allen and Waugh (*Proc. Staff Meet., Mayo Clin.* **18**:102 [April 7] 1943) used it in 497 surgical cases in which thrombosis seemed likely. In 4 cases thrombosis or embolism developed and in 3 of these it was difficult to secure a satisfactory increase in prothrombin time. Hemorrhage was a complication in 47 of these cases, but it was minor in 29 and moderate to severe in only 18. It was fatal in 1 case.

There are several difficulties encountered in the routine preoperative and postoperative use of dicumarol. Obviously one would select only those patients with types of operations which are known to carry a higher than normal incidence of postoperative thrombosis and embolism. Some of these factors are age over 40, obesity, history of previous thrombosis, operations in the pelvis, lower abdomen or thigh and operations requiring prolonged immobility, just to mention some of the factors. Even in this group many simple measures, such as adequate fluid intake, correction of the anemia, postoperative Trendelenburg position and early mobilization are helpful. Sodium tetrathionate (*Surgery* **14**:661 [Nov.] 1943) and neostigmine (*Arch. Surg.* **48**:105 [Feb.] 1944) have been suggested as preventive measures, but their value on a large controlled material is not yet confirmed.

The crux of this important problem is this: If patients could be picked out preoperatively who show a tendency to thrombosis, their intensive treatment with anticoagulants might be logical. Such a test has been suggested (*Surg., Gynec. & Obst.* **77**:31 [July] 1943). Patients showing a poor response to heparin may be given heparin for two days with simultaneous doses of dicumarol. The customary dose of dicumarol is 300 mg. the first, 200 mg. the second, and 100 mg. the third day. Unless daily determinations of prothrombin time are available, the administration of the drug is dangerous. The prothrombin time must be kept between 50 and 30 per cent below normal. Experience with operations during the influence of heparin or dicumarol indicate that heparin does not affect capillary contractility and the field is not as vascular as it is when dicumarol is in effect. Dicumarol is not on the market and has not yet been accepted by the Council on Pharmacy and Chemistry.

2. The administration of fluids into the leg veins occasionally is the cause of superficial chemical thrombophlebitis. Since such a superficial thrombophlebitis practically never metastasizes, it is rarely the cause of an embolism.

The position of the patient on the operating table, particularly the Trendelenburg position, does not influence the production of thrombophlebitis and embolism.

Dicumarol is too dangerous a drug to be given routinely in all postoperative cases. Dicumarol is recommended postoperatively at the first indication of any thrombophlebitic emergency, preferably combined with heparin, because it will take dicumarol at least two days to exert an anticoagulative effect. Dicumarol alone is recommended as a routine prophylaxis for patients who give a history of having had thrombophlebitic emergencies following previous operations or childbirth. The initial dose is given on the third day postoperatively unless the surgeon feels that there is still danger of hemorrhage. The initial dose is 300 mg. for a patient of over 150 pounds (68 Kg.) and 200 mg. for a patient under 150 pounds, followed by a daily maintenance dose of 100 mg. A daily morning prothrombin time is essential and the daily afternoon dose of dicumarol is omitted when the prothrombin time has reached 60 to 69 per cent. Each time the morning prothrombin time climbs back to above 70 per cent, another 100 mg. of dicumarol is administered. The patient is allowed up according to surgical indications, but only if the prothrombin time is below 75 per cent. When the patient is up the dicumarol is discontinued, there being another four to five days of dicumarol protection before effects wear off.

## MENSTRUATION AND PREGNANCY DURING NURSING PERIOD

***To the Editor:***—**Do women menstruate while nursing? If so, about what percentage? Is it possible for women who do not menstruate, while nursing, to become pregnant?**

**M.D., West Virginia.**

ANSWER.—Menstruation does occur in many women who nurse their babies. Likewise, ovulation can take place in nursing mothers who do not menstruate, as evidenced by the fact that pregnancy not infrequently occurs during the period of lactation before the return of the menses. Many lay persons and some physicians still believe that breast nursing is a barrier to conception, but many women have learned otherwise from personal experience.

According to De Lee and Greenhill (Principles and Practice of Obstetrics, ed. 8, Philadelphia, W. B. Saunders Company, 1943, p. 330) the return of menstruation following childbirth varies in different women. In those who do not nurse their babies the menses usually return in six weeks, while in those who nurse their children the first period usually appears after the third or fourth month. In some women, however, the menses do not return until the baby is weaned.

Lass, Smelser and Kurzrock (*Endocrinology* **23**:39 [July] 1938) studied 47 normal women during the postpartum period. Each woman was nursing regularly but still having regular periods of catamenia. Endometrial biopsies were taken at four week intervals. From these 47 women 194 biopsies were obtained. It was found that the time of appearance of the first ovulatory cycle was irregular. Of the 194 cycles 106, or 55 per cent, were anovulatory but the rest (45 per cent) were ovulatory, and therefore pregnancy was possible.

Rutherford and Mezer (THE JOURNAL, May 9, 1942, p. 124) studied endometrial biopsies from lactating and nonlactating puerperal women. In the former there was definite evidence of ovulation five weeks post partum, and the authors believe that ovulation occurs, on the average, six weeks after delivery. In lactating patients menstruation may be delayed for varying periods, but from the eighth week on the ovarian cycle may escape from pituitary inhibition and render a patient susceptible to impregnation. Therefore the period of lactation is not necessarily a "safe period."

## CARCINOMA OF THE VULVA

***To the Editor:***—**I have recently removed, with rather wide excision, a tumor which proved to be an adenocarcinoma of the vulva. The pathologist states that all of the tumor was included in the tissue submitted for examination and that it had apparently developed from one of the sweat glands. This small tumor, about 1 cm. in diameter, had been present for about six months. It was apparently well circumscribed and was not penetrative in its growth. What further procedures are indicated?**

**Charles W. Davis, M.D., Humboldt, Tenn.**

ANSWER.—Carcinoma of the vulva metastasizes to the inguinal glands. The fact that the tumor was thought to be entirely removed does not give assurance that some of the cells have not extended along the line of lymphatic drainage. This patient should therefore receive high voltage x-ray therapy over each inguinal area or have the inguinal glands removed by surgical excision.

## ENDOCRINE DISTURBANCES AND ALLERGY

*To the Editor:*—What is the influence of allergy on the Friedman modification of the Aschheim-Zondek test? A white woman aged 40 has a history of several years' duration which strongly suggests allergy. In the remote past she had sinusitis, treated by removal of some intranasal material, possibly polyps. About four years ago she began to have abdominal cramps and diarrhea, and occasional rectal bleeding. Examination at that time included a series of gastrointestinal x-ray examinations, urinalysis, complete blood count, determination of basal metabolic rate, sigmoidoscopy and study of the stool. All tests yielded normal observations. At this time no medication seemed to help the patient and it was finally decided to perform an exploratory laparotomy. This revealed no evidence of disease and no evidence of allergy. The appendix was removed for prophylactic reasons. Following the operation the patient did well for a long time, but eventually the attacks of cramps recurred. This time, however, there was rarely diarrhea accompanying the attacks. Recently the patient reported a new symptom, intermenstrual bleeding, which occurs on slight trauma, such as sitting down at stool. The blood is small in amount but bright red and unlike that seen in menstrual bleeding. The clinical impression was either endocrine bleeding or uterine neoplasm. It was decided to do a curettage for diagnostic purposes to eliminate the possibility of cancer. In such cases I routinely have a Friedman modification of the Aschheim-Zondek test made in the attempt to rule out the possible presence of pregnancy. On attempting this test on this patient 3 rabbits died on two occasions after the injection of the patient's urine. The laboratory reported to me that the rabbits died from anaphylactic shock. I have now begun a thorough allergy work-up. I wish to obtain information in regard to the following points: Has uterine bleeding, especially intermenstrual bleeding, been recorded as the result of allergy? Have similar results been obtained before on attempting Aschheim-Zondek tests on allergic patients? Has allergy ever been found to be due to any of the endocrine glands, e. g. ovary or corpus luteum?

M.D., New York.

Answer.—The relationship between the many possible endocrine disturbances to the symptoms of allergy is still one of the unexplored fields. Patients whose asthma was due to specifically known allergens have been completely relieved without any treatment during the period of gestation with recurrence of symptoms during the puerperium or shortly thereafter. Conversely, patients have been seen whose asthma was definitely aggravated during pregnancy. One patient, observed recently, had not required treatment for pollen asthma during the past three years: an arrested case of asthma due to molds and pollens. Shortly after the beginning of her pregnancy she developed severe asthma, which remained throughout her pregnancy. This appeared to be due to the molds and later to three pollens. During the ninth month of her pregnancy, despite the presence of molds and pollens in greater abundance than had been the case the previous few months, the symptoms of asthma subsided quite suddenly and did not recur after the puerperium. The patient had no treatment during all this period of observation. The frequency with which all allergic symptoms are aggravated during the menstrual period or immediately after is well known. However, nothing is known that would conform to the case mentioned in this inquiry. To answer the questions asked: 1. Uterine bleeding, especially intermenstrual bleeding, has not been reported as the result of allergy. 2. No results of Aschheim-Zondek tests on allergic patients such as reported in this query are mentioned in the literature. There would seem to be no reason for reporting the deaths of the rabbits as "anaphylactic deaths" after a first injection of a suspected antigen. It is difficult at times to state definitely that death in a rabbit is due to anaphylaxis. 3. While it is reasonable to assume that disturbances in endocrine function may influence all symptoms, it is not necessarily true that this is due to sensitivity to any of the endocrine glands involved or to their products. "Autosensitization" to injured or diseased tissues in the animal is still in the hypothetical research stage. Sensitization of the animal, whether human or otherwise, to its own normal organs or secretions of organs, is inconceivable since it is incompatible with life.

## NEEDLE EMBEDDED IN SACRAL COLUMN

*To the Editor:*—While the Hingson-Edwards method was being used the needle broke accidentally, and x-ray examination shows that it is embedded in the sacral column. The chief concern now is whether the material in the needle may cause electrolytic action which would set up a reaction to the bone structure; the needle referred to is made of number 8 stainless steel with about 18 per cent chrome and 10 per cent nickel. There is also the possibility that the needle may work itself through the bone structure into the tissues of the nervous system.

M.D., New Jersey.

Answer.—It should be determined by the roentgenologists whether the needle is in the hollow canal of the sacrum or whether it is posterior or anterior to the sacrum. It is the writer's opinion that this needle should be removed as soon as possible. It may travel, but especially it may become associated with an infection and abscess formation, and this may become multiple. This same accident has occurred elsewhere, and once a needle was left in place for eight days: a small abscess developed. In another case a needle was removed within two days and no infection resulted.

## LOCAL ANESTHETIC INJECTIONS FOR SPRAINS

*To the Editor:*—Since reading Lieutenant Commander McMaster's article on ankle sprain in The Journal, July 3, 1943, I have been trying this method on a few patients. I have also used it in cases of sprain of the lateral ligaments of the knee joint. I have been using 2 per cent procaine with epinephrine, although the article specifies this same strength without epinephrine. I find that there is immediate relief, of course, but when the effect of the local anesthetic begins to wear off in a short while the pain is frequently worse than ever, requiring sedation in most cases. Would the addition of the solution of epinephrine hydrochloride (1: 50,000) make this occur? If so, why? Is there any more danger in using the procaine without epinephrine than with it?

M.D., Ontario.

Answer.—In the original article (*Press méd.* **40**:280 [Feb. 20] 1932) Leriche used procaine 2 per cent for injection of sprained ligaments about the ankle. No mention is made of the use of epinephrine. As this was originally Leriche's method and it does relieve the pain of a sprained ankle, sometimes permanently, there is no reason for the addition of epinephrine. There is also no reason why the use of epinephrine should cause the pain to recur unless the return of blood to the ischemic area produced by epinephrine may cause painful pressure. The action of epinephrine in local anesthesia is to cut down the blood flow in the area and thus keep the anesthetic localized and retained longer, possibly prolonging its action. The danger of the general action of procaine might thus be lessened. However, in using Leriche's method of ankle injection it would be well to follow the letter of his technic until some changes should be proved better. The same rule applies for every one who uses a given technic devised by an expert and is especially true in the case of an occasional user; as in Orr's method of treating osteomyelitis or compound fracture, the Carrel-Dakin treatment of wounds, the Lane technic or the Hobart operation for recurrent dislocation of the shoulder.

## HIGH ALTITUDE FLYING AND IMPOTENCE

*To the Editor:*—Will you kindly advise me whether frequent high altitude flying bears any causal relation to male impotence?

M.D., New York.

Answer.—There is no reason to believe that high altitude flying per se has any causal relation to male impotence.

The use of oxygen nullifies the physical effects of altitude up to 34,000 feet and to a decreasing degree above that level. Except for combat flying, planes rarely go above that altitude and usually not nearly that high. Flying for long periods repeatedly at moderate altitudes of 12,000 to 18,000 feet without oxygen results in the development of chronic fatigue and a gradual lowering of the ceiling of the individual. This chronic fatigue might be a factor in the development of impotence. It is recognized that all pilots should use oxygen above 10,000 feet, and some authorities advise its use for prolonged flights above 8,000 feet. With this precaution there should be no deleterious effects from the altitude itself. Regardless of altitude, however, flying long hours without adequate rest periods, especially flying under conditions of stress, often results in the development of a condition known as aeroneurosis. This condition might lead to temporary impotence.

## APPENDIX IN LEFT LOWER QUADRANT OF ABDOMEN

*To the Editor:*—In what percentage of cases is the appendix found in the left lower quadrant of the abdomen?

Lloyd J. Netto, M.D., West Palm Beach, Fla.

Answer.—The percentage of cases in which the appendix is found in the left lower quadrant of the abdomen is not known. An estimate would be that it is between one tenth and one hundredth of 1 per cent. It may be due to an unusually long mesentery, to arrested fetal development or to transposition of the viscera.

## NATURAL SULFUR WATER AND PEPTIC ULCER

*To the Editor:*—Is natural sulfur water as drunk at various springs contraindicated for persons who have peptic ulcer?

F. H. Hodges, M.D., Pikeville, Ky.

Answer.—Evidence to support the supposition that sulfur water from natural springs is contraindicated in persons who have peptic ulcer has not been found. The possibility of formation of sulfuric acid is too remote to be of any significance.